Elementary Science

Class Four

National Curriculum and Textbook Board, Bangladesh

Prescribed by the National Curriculum and Textbook Board as a textbook for class four from the academic year 2013

Elementary Science

Class Four

Revised edition for academic year 2025

NATIONAL CURRICULUM AND TEXTBOOK BOARD, BANGLADESH

Preface

Primary level constructs the foundation of education. A set of well-defined targets and properly planned primary education provide strengths to the entire education system. Keeping this in mind, the primary level has been given supreme importance in the Education Policy 2010. Increasing the span and inclusiveness of the primary level, as the developed countries of the world, have been emphasised. Special attention has been given to ensure that no child's access to education is hindered by social and economic status, religion, ethnicity, or gender identity.

The National Curriculum and Textbook Board (NCTB) has implemented an integrated curriculum to update primary education. While this curriculum trails the pedagogy and the curriculum of developed countries, it also adopts traditional teaching-learning values of Bangladesh at the same time. This has enabled the education to be more life-oriented and productive. In the context of globalisation, the mental health of the children has also been specially considered in this curriculum.

Textbook is the most important component of curriculum implementation. NCTB has always borne that in mind while designing textbooks for all levels and classes including primary level. Curriculum goals and objectives have been prioritised in the writing and editing of each book. A keen eye has been kept on the diverse curiosity and capacity of the child's mind. Special importance has been given in designing the curriculum and textbooks to make teaching-learning interactive and enjoyable. It is hoped that each book will help in the balanced psycho-physical development of children through educational activities. It will support in acquiring the required skills, adaptability, patriotism and moral values at the same time.

The textbook Elementary Science has been designed as a compulsory subject at the primary level. It includes necessary explanations, images, and examples to present scientific topics in a simple and engaging way. Special emphasis is placed on integrating science and technology to foster human resources capable of leading the Fourth Industrial Revolution. Additionally, the textbook prioritizes two main aspects of science education: acquisition of information-rich knowledge and participation through asking questions, experimenting and verifying data and theories.

Special thanks to the specialists and teachers who worked intensively in writing, editing and revising the textbook. Thanks to those also who have made the textbook attractive to children through its design and illustration. This textbook, written under the curriculum 2012, has been revised to address the need in the changed context of 2024. Due to time constraints, some errors may still exist. Any constructive advice and guidance from the audience will be considered with due importance.

At the end, I wish every success of the learners for whom the book has been produced.

October 2024

Professor Dr. A K M Reazul Hassan
Chairman
National Curriculum & Textbook Board, Bangladesh

Major Features of the Revised Primary Science Textbooks

(1) User-friendly

- Learning contents, illustrations and text presentations are considered taking into account the developmental stage of pupils, which emphasize mainly on the conceptual development rather than rote learning.
- Enquiring of pupils' prior knowledge and experience are tried to address in the lesson.
- Grade fitting simple texts and child friendly description.
- Clear titles, subtitles, and large number of illustrations and photographs.
- Abstract things of science are portrayed with pictures/photographs as well as proper description.
- Introduction of characters and symbols to make lesson easy-to-understand & attractive for the children.
- New scientific terminologies used in each chapter are highlighted with coloured and bold letters.
- Addition of glossary at the end of the textbook.

(2) Emphasis on problem-solving based learning

- The key questions highlighted as the core points of teaching learning in each lesson.
- Experiment related alternative equipment/teaching aids are suggested.
- Basic layout of the textbook follows the sequence of problem solving approach.
- Learning activities aimed at the acquisition of scientific process skills necessary for children to solve the problem.

(3) Planned activities and experimentation

- Introduction of a variety of experiments, demonstration, observation and investigation to promote the scientific attitude of the pupils.
- Introduction of the discussion activities to foster communication skills, expression ability and positive attitude of the pupils.
- Teaching aids are suggested in consideration with the relevance of the lesson outcomes and the availability.

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Characters and symbols

1) Characters

Keya

Kabbo

Keya and **Kabbo** will give you some tips or clues about your learning of science. Let's learn Science together!

2) Symbols

Activity: Let's observe, investigate and experiment!

Discussion: Let's discuss with classmates!

Caution: Let's work carefully to keep ourselves safe!

2025

Chapter 1

Living Things and Environment

1. Living things in the environment

We observe different living and non-living things and events around us. All those living things and objects make our environment. There are different types of environments such as natural and man-made environment. Different living things live in different environments. In this chapter, we shall learn about the requirements of living things for survival.

natural environment

man-made environment

(1) Requirements of living things for survival

QUESTION : What do living things need to survive?

Activity : Needs for living things

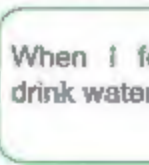
What to Do :

Let's . . .

1. make a table like the one shown below.

what living things need to survive

2. in the table above, make a list of what living things need to survive.
3. share your ideas with your classmates.

If I cover my nose and mouth with a hand, I cannot breathe.

When I feel thirsty, I drink water.

2025

Summary

Living things need food, habitat, shelter, water, and air to survive.

Food

Animals have to take food to get nutrition and energy for survival. They get food from plants or other animals in the environment. Plants also need energy and nutrients but they do not take food as animals do. Plants can make their own food by themselves.

Habitat and Shelter

All living things need habitats. A **habitat** is a special place where plants grow and animals live in. Animals also need shelter. A **shelter** is a place where animals can be safe. Shelter provides animals with protection from other **predators** or adverse weather conditions such as rainfall and storm. Some animals such as birds make nest in the trees for shelter.

Birds make nests in trees for shelter

Water

No living things can survive without water. Plants use water when they make food. Animals drink water to digest their food. Many plants and animals live in water.

Many living things live in water

Air

Air is very important for living things. Plants use carbon dioxide from air and give off oxygen into air when they make food. Animals and plants both use the oxygen from air and give off carbon dioxide for breathing.

Living things get all the necessary things from the environment for their survival.

Air is important for living things

2025

(2) What plants need to make food

QUESTION : What do plants need to make food?

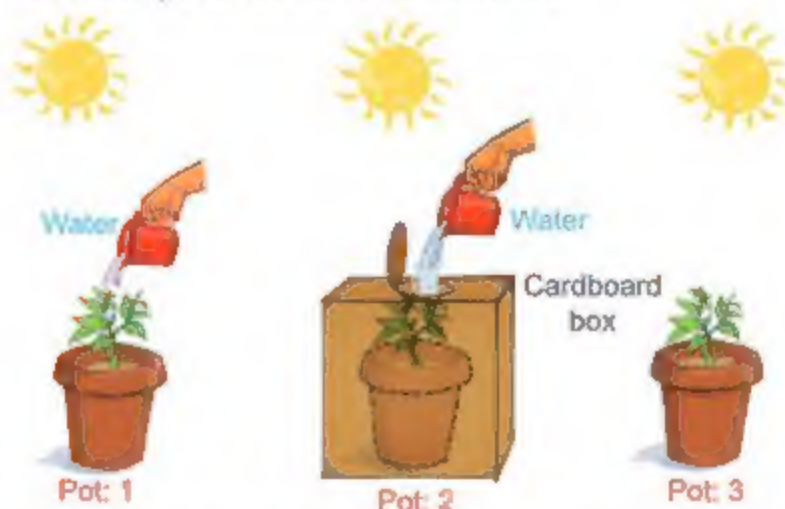
Activity : Necessary elements for the growth of plants

What to Do :

Let's . . .

1. make a table like the one shown below:

Pot	Condition	Your observation
1	There are sunlight & water	
2	There is water but no sunlight	
3	There is sunlight but no water.	

2. prepare three plant pots with gram seedlings.
3. there is sunlight but no water. Set up three plant pots like the figures below. Put the pots 1 and 3 in the sunlight but cover the pot 2 with a cardboard box.

4. water the pots 1 and 2 every day but do not water the pot 3.
5. after a couple of weeks, compare the growth of seedlings in each pot.
6. record your observation in the table.
7. share the ideas with classmates.

2025

Result

Pot	Condition	Your observation
1	There are sunlight & water	the seedling is growing well.
2	There is water but no sunlight	It is not growing well. The colour of leaves and stems becomes yellow.
3	There is sunlight but no water	the seeding has died.

Discussion

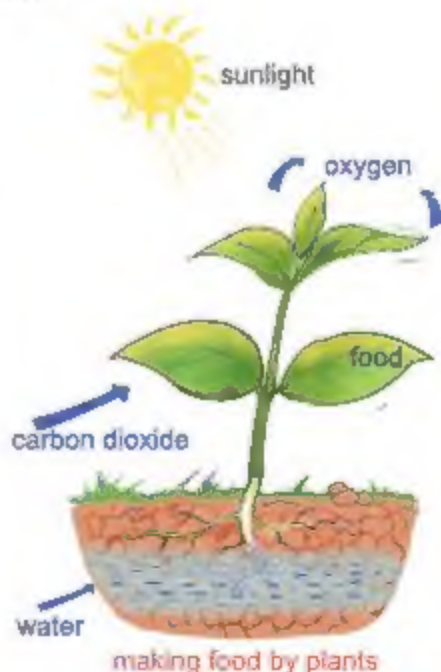
◆ **Discuss the following points with your classmates based on your observation.**

(1) What condition is different between the pot 1 and pot 2?
(2) Which seedling has grown well - pot 1 or pot 2? Why ?
(3) What condition is different between the pot 1 and pot 3?
(4) Which gram has grown well - pot 1 or pot 3? Why ?
(5) What elements do plants need to grow?

Summary

Plants cannot live without sunlight and water.
Plants produce their necessary food from water and carbon dioxide in the presence of sunlight. Plants' food is mainly carbohydrate. Most of the plants' food is produced in their leaves. Through their roots, plants absorb water required to produce food. On the other hand, they receive carbon dioxide from the air. Plants release the oxygen produced in this process to the air. Plants get necessary energy from their self prepared food for survival and growth.
To make their food plants need sunlight, water and carbon dioxide from the air.

making food by plants

2025

2. Human dependency on plants and animals for food

Human need food to survive. They eat plants and other animals as food to get energy

QUESTION **How do human depend on plants and animals for their food?**

Activity **Sources of our food**

What to Do :

Let's . . .

1. make a table like the one shown below

Food	
Plant food	Animal food

2. make a list of food from the picture below, and classify them into plant and animal group in the table above
3. share your idea with classmates.

2025

Summary

Humans eat various kinds of plants and animals as food to get energy
Human directly or indirectly depends on the environment for their food

Energy passing through food

All living beings need energy to survive and grow. Plants produce their own food from water and carbon dioxide in presence of sunlight. This food supplies necessary energy to plants. Plants get this energy from sunlight. Animals cannot produce food by themselves. They must consume plants or any other animal as food to survive. In this way, energy passes through food. The prime source of energy is the sun. This energy flows into plants' body while producing their own food. Then, energy is transfered and stored into the animal's body when animals consume plants or vegetative parts.

energy flow from the Sun to living things

3. Changes in the environment

QUESTION What causes environmental changes?

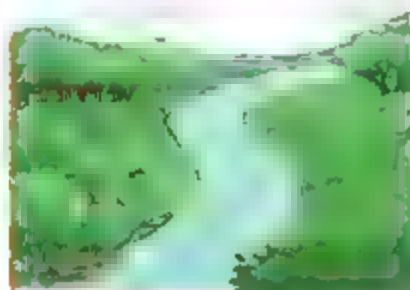
Activity **How has the environment been changing?**

What to Do :

Let's . . .

1. make a table like the one shown below

causes of changes in environment

2. compare two pictures below, and make a list of causes of changes between the two environments in the table
3. share the ideas with classmates

Discussion

Let's . . .

◆**Think about the following points based on the table made avobe.**

1. Who has mainly changed the environment?
2. Why are they changing the environment?

Summary

The causes of environmental change

The normal condition of the environment changes because of natural disasters and various human activities. Natural disasters such as

drought, flood, storm, earthquake change the environment. Humans have been continuously cutting down trees to use as fuel and building materials. Besides they are filling up bills, jhills, haors and making unplanned roads and barrages on haors. Again, they are destroying forest by cutting down trees to grow crops and to make farms, houses, road-streets and factories. Humans are also changing the environment to extract various kinds of natural resources.

humans are cutting forests to build roads

[illegible]

[illegible]

The effects of environmental change

Various types of environmental changes occur due to different factors. These overall changes cause climate change. One of the examples of this change is temperature rise. Similarly, climate change causes natural disasters like untimely rainfall or reduced rainfall, drought, tidal surges, salinity and floods. Natural disasters cause serious damage to the lives and habitats of humans and all living beings.

flood

drought

EXERCISES

1. Fill in the blanks.

1) A place where animals can be safe is called _____
2) Living things get all the necessary things from ______
3) Plants need _____, water and air in order to make food
4) Human changes the environment to get ______

2. Put a tick mark (✔) on the correct answer.

1) What do plants give off when they make food?

a. oxygen b. water vapors
c. carbon dioxide d. nitrogen

2) Where do humans directly get energy to survive?

a. air b. water
c. soil d. food

3. Short Questions:

1) What kinds of natural disaster may change the environment?
2) What do living things need to survive?
3) What do plants need to make food?

4. Descriptive Questions:

1) How humans are changing the environment?
2) What will happen to the green grasses if we put a brick on them for some days? Why?
3) How are living things being harmed by environmental changes?
4) What are the differences between habitat and shelter?

5. Using the words in the box below, explain how the energy can pass through food from the Sun to Humans. You can use arrows to show the energy flow.

plants	the Sun	human	animals

Chapter 2

Plants and Animals

1. Differences between plants and animals

Plants and animals are both living Can you see any differnces? How can we differentiate between plants and animals?

QUESTION What are the differences between plants and animals?

Activity **Characteristics of plants and animals**

What to Do:

Let's . . .

1 make a table like the one shown below

Questions	Plants	Animals
How do they get energy?		
What body parts do they have?		
How do they move from place to place?		
How do they respond to a stimulation?		
Anything else?		

2 make a list of the characteristics of plants and animals in the table

3 differentiate plants from animals comparing their characteristics

4. share the ideas with classmates.

Can you remember the characteristics of plants and animals?

An animal has legs, wings or fins to move but plants are rooted in the ground

2025

Summary

Plants differ from animals in many aspects

Making food

Plants can make their own food by themselves. Animals can not make their own food and are dependent on plants and other animals for food.

Plants can make food by themselves

Animals depend on plants and other animals for food

Different parts of the body

Plants have body parts such as roots, stems and leaves. Animals have body parts such as limbs, fins or wings. Some have fur or some have scales or feather. Most of the animals also have eyes, ears, mouth and nose to keep them alive.

Movement

Plants generally are rooted in one place and do not move from place to place on their own. Most of animals have the ability to move freely by using limbs, wings or fins.

Animals can move freely

Plants are rooted in soil

2. Living things in their environment

(1) Plants in the environment

Plants grow in many places. Some plants grow on soil and some grow in or on water. Some plants grow both on soil and in water.

QUESTION Where do plants grow in the environment ?

Activity **Where plants grow ?**

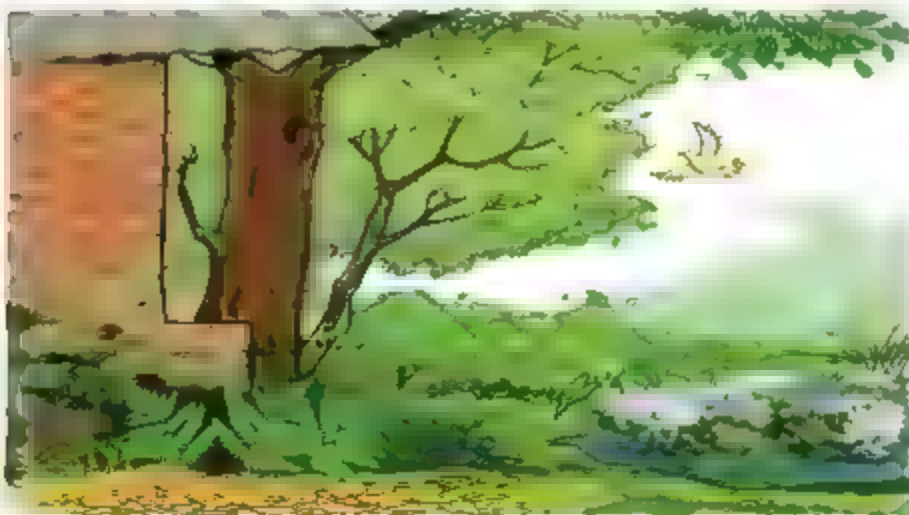
What to Do :

Let's .

1. make a table like the one shown below.

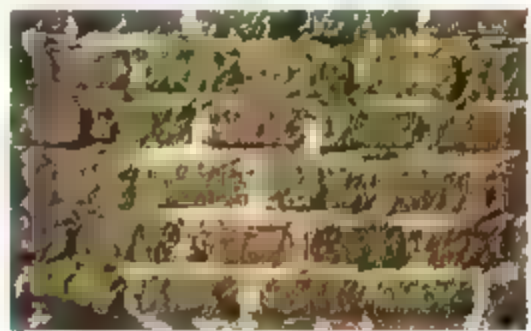
Name of plant	Where do you find it?

2. go out of the classroom with your exercise books.
3. find plants around your school and write the name and the place of plants you have found in the table.
4. share the ideas with classmates.

2025

Summary

Habitat of Plants

Plants need suitable habitats for survival or normal living. So, habitats are different based on the plant species. Some plants like mango, berry, jackfruit etc. grow in bright sunny places. Again, some plants like mosses and ferns grow in shady, moist and cold places. Some other plants like mango trees and berry trees grow in lands. Again, plants like water hyacinth and water lily grow in water. On the other hand, kalmi and helencha etc. can grow in both environments water and lands.

moss on the wall

Some plants grow in saline soil. Sundarban is such kind of saline soil environment in Bangladesh. The plants grow in this environment are different than those of other regions. These plants have pneumatophore for breathing. Sundori, Goran, Kewra are the examples of such kind of plants.

There are some plants, which grow on other big trees such as Shomolota, Rasna etc.

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(2) Animals in the environment

Animals live in many places such as land, water, trees and hills etc Which animals live in which places?

QUESTION **Where do animals live in the environment ?**

Activity **Living places of animals**

What to Do :

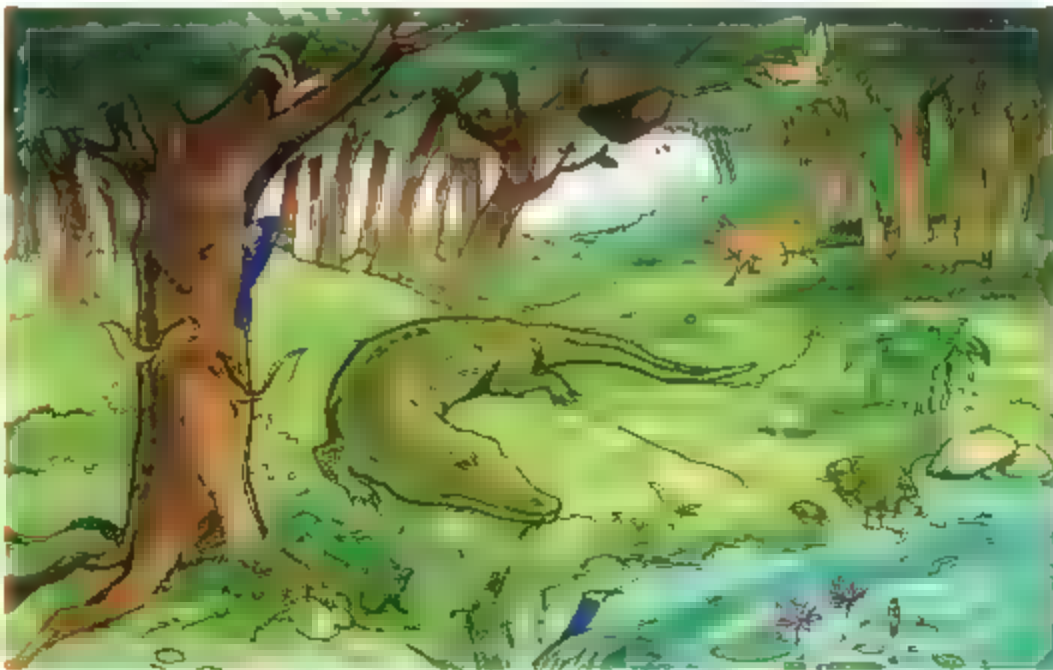
Let's . . .

1 make a table like the one shown below

Name of animal	Where do they live?

2 Seeing the picture below, write the names and the living places of different animals in the table.

3 share the ideas with classmates

2025

Summary

Habitat of animals

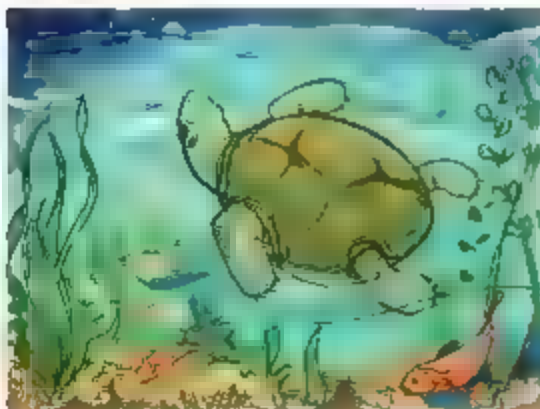
Different animals live in different habitats. Some animals such as rats, rabbits, and porcupine etc live in burrows. Besides, some animals such as, beetles, ants and earthworm etc. live in the soil.

[illegible]

[illegible]

Animals like jackal, mongoose live in bushes or woods

Birds and squirrels make their nests in trees or live in tree holes. Some insects such as butterflies and bees also use trees as their habitats

We find fish and shrimps in the water. Frogs, turtles and crocodile can live both on land and in water.

fishes, turtles live in water

birds make nest in trees

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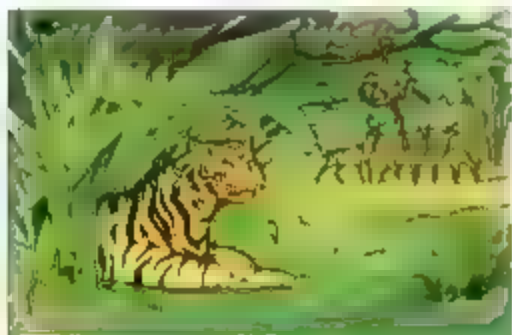
(3) Diversity of plants and animals based on habitat

We have already come to know that plants and animals live in different habitats in the environment. There are various types of habitats on Earth such as land, wetland, ocean, desert, forest and polar region. Different habitats have different characteristics.

Plants and animals adapt themselves in different ways to survive in those different habitats.

Desert Habitat

A desert is an extremely dry place with very little water and rain. Some spiny shrubs such as Cactus grow in this environment. The stem and leaves of these plants are succulent and its smooth outermost surface helps to retain water. Different types of animals such as snake, lizard camel live in desert. A camel stores fat in its hump. This stored fat helps it to survive longer period without water or food in desert environment.

forest habitat

wetland habitat

Forest Habitat

A forest is emerged where various kinds of plants grow naturally in plenty. For example- the Sundarbans and the Sal Forest. Sundari, geua, goran, golpata etc. are plants growing in forest habitats. Forests are also the habitats of various animals like the Royal Bengal Tiger, deer, fishing cat, wild cat, monkey, birds, etc.

Aquatic Habitat

Pond, cannel, wetland etc. are wetland habitat. Water lily, Water hyacinth, dack weed and other aquatic plants grow in wetland. Mussels, shrimps and fishes etc. are the examples of animals of wetland habitat.

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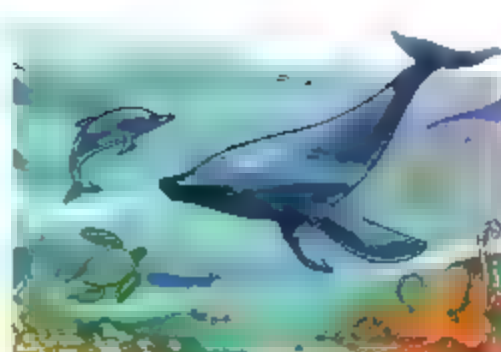
Marine Habitat

Ocean is a large reservoir of saline water. Ocean is used as a habitat of different kinds of animals and plants. Whales, dolphins, fishes and crabs etc. are the examples of animals living in the ocean. Among the plants, there are algae and sea weeds.

Polar Habitat

Polar region is the extremely cold and ice covered place of earth which is situated at the furthest northern hemisphere and southern hemisphere. Pines and few grasses grow in those regions. Polar bear, Seals and Penguin etc live in that area. To protect themselves from the extreme cold weather, these animals have very thick skin and are covered with fur.

Discussion

- **Which environment do plants and animals live in?**

Let's . . .

1. make a table like the one shown below

Habitat	Plants	Animals
Desert		
Forest		
Wetland		
Ocean		
Polar		

2. make a list of plants and animals that live in each habitat in the table
3. share the ideas with classmates.

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3. The effects of environment on living things

The positive effects of environment on plants and animals

Many kinds of plants and animals live in the environment. Plants and animals get food, water and shelter from the environment to survive. They depend on each other

The negative effects of environment on plants and animals

The environment is being changed due to some natural causes such as flood, storm, drought etc. Human activities have also been changing the environment drastically. The environmental changes cause the destruction of the habitats of plants and animals. Therefore, plants and animals might die or some of them might become extinct such as Dodo bird and Tasmanian tiger. In Bangladesh, Javan rhinoceros, King vulture and Lal shir became extinct. Tal palm tree and the Royal Bengal Tiger are endangered at present condition.

Tal palm is an endangered plant

Royal Bengal Tiger is an endangered animal

extinct Javan rhinoceros

Discussion

- **Who are responsible for environment change?**

Let's . . .

1. make a list of the causes of environmental changes in the table shown at your right.
2. share the ideas with classmates.

natural causes	human causes

2025

EXERCISES

1. Fill in the blanks.

1) The part of an environment where a plant or an animal lives is called ________________.
2) Different plants and animals live in different ________
3) A _______ is a place with many trees that grow densely
4) An _______ is a big reservoir of salty water.
5) A camel stores _______ in its hump

2. Put a tick mark (✔) on the correct answer.

1) Where does a whale live?
   a. river b. ocean
   c. desert d. forest
2) How can the thick fur help polar bears?
   a. keep them warm b. keep away some animals
   c. Keep them cool d. help them swim
3) Which one is extinct animal?
   a. Dodo bird b. Royel Bengal Tiger
   c. Dove d. Polar bear

3. Short Questions:

1) Write three differences between plants and animals.
2) What causes environment change?
3) Write the names of four habitats of plants and animals

4. Descriptive Questions:

1) How do cactus and camel survive in the desert?
2) Why do some plants and animals become extinct?
3) Which region does Penguin live in? What are the characteristics of that region?

5. Match the words from the left column with the words from the right column.

whale	desert
water hyacinth	pond
lizard	forest
monkey	Ocean

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Chapter 3

Soil

1. The Importance of Soil

Soil is the loose covering of Earth's surface. Plants and animals use soil as their habitat. Plants grow on soil. Animals eat plants to get energy. People use soil in their life in different ways.

QUESTION **Why is soil important in our life?**

Activity **The use of soil**

What to Do :

Let's . . .

1. make a table like the one shown below

uses of soil

2. make a list of uses of soil in our life in the table
3. share the ideas with classmates.

Summary

There are different uses of Soil. People use soil for different purposes.

Agriculture

People use soil for growing plants. Soil provides necessary water and nutrients for plants. People grow vegetable and crops for food they need to live on.

growing crops in soil

Building

People make houses and buildings on soil. Soil can be used for making building materials such as bricks or concrete.

Arts and Crafts

Soil is used for making pottery that can create kitchen goods such as pots, vases, bowls etc. People also use soil in making artwork for interior decoration and for exhibition.

pottery

Landfills

A lot of garbage that people throw away goes to a landfill. **Landfills** are areas where garbage is dumped on the land. Most of trash that we throw away ends up in a landfill. Sometimes garbages have dumped in a specific area or build it within the soil.

burying trash with soil

2. Growth of Soil Fertility

We learnt that plants need air, water and sunlight to grow. What else do they need to grow well?

QUESTION : How can we grow plants well?

Activity **The need of plants to grow well**

What to Do :

Let's . . .

1 make a table like the one shown below

pot	conditions	data through observation
1	Plants with fertilizer	
2	Plants without fertilizer	

2 prepare two similar plant pots with gram seedling
3 add fertilizer to the pot 1 but do not add fertilizer to the pot 2.
4 set up two plant pots like the figures below Keep the pot 1 and 2 in the sunlight and water them every day.

5. after a couple of weeks, compare the growth of gram seedlings in each pot.
6 record your observation in the table
7 share the ideas with classmates.

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Summary

We found that plants grow well in soil that contains fertilizers. Fertilizers include the elements that are most important in plant nutrients. Plants need nutrients to grow and thrive. The soil that contains more nutrients necessary for plants is more fertile. Soil fertility is the capacity of soil to grow crops. The followings are some good ideas on how to make soil fertile.

(1) Using Fertilizer

Farmers apply fertilizers in soil to produce crops. The fertilizer can help in restoring lost soil nutrients. Fertilizer can be divided into two groups: organic fertilizer and inorganic fertilizer. Cowdung and compost are organic fertilizers and urea and TSP are inorganic fertilizers.

organic fertilizer: compost　　　inorganic fertilizer: urea

(2) Rotating Crops

If the same crop is cultivated year after year in the same field, crop uses up some of nutrients in the soil. Crop rotation helps maintain soil fertility. Some crops such as beans help put nutrients back into the soil.

Lost nutrients in soil can be replaced by rotating crops

3. Soil Pollution

Soil pollution happens when people put harmful materials directly or indirectly into the soil.

QUESTION : What causes soil pollution?

Activity **The causes of soil pollution**

What to Do :

Let's . . .

1. make a table like the one shown below

The causes of soil pollution

2. make a list of the causes of soil pollution in the table above.
3. share the ideas with classmates.

Discussion

◆ **What can we do to prevent soil pollution?**

1. Let's share the ideas with classmates on how we can prevent soil pollution.

Summary

littering garbage on the land

Causes of Soil Pollution

Soil is polluted by different human activities. As for examples–1) littering garbage and domestic waste on the land which do not decompose, 2) the use of pesticides or herbicide for agricultural activities, and 3) leakages of oil or harmful materials from factories to the land.

Effects of Soil Pollution

pesticide spraying in paddy field

Soil pollution harms living things and destroys their habitats and the nature. Soil pollution reduces soil productivity. Crop grown in polluted soil may have harmful things. Soil pollution causes diseases in both humans and many other animals.

How to Prevent Soil Pollution

picking up trash

Here are the good practices that we can do to prevent soil pollution: 1) dumping garbage in specific places, 2) reduce the use of materials which are not decomposed in the soil, reuse and recycle something and 3) use organic fertilizer such as composts in the crop field.

Conservation of Soil

planting trees

Soil conservation is protection of soil from erosion or the maintenance of soil fertility. **Soil erosion** occurs when top soil is removed by wind and water. It results in the loss of fertile soil and reduces the ability of holding water. Plants play an important role in preventing soil erosion by their roots. We can prevent soil erosion by planting trees, and growing grasses on land.

EXERCISES

1. Fill in the blanks.

1) The loose covering of Earth's surface is called ____________

2) ________ happens when people introduce harmful materials into the soil

3) Compost is an ________ fertilizer.

2. Put a tick mark (✔) on the correct answer.

1) What is the cause of soil pollution?

a. littering trash b. picking up trash
c. using composts d. recycling

2) How can we maintain soil fertility?

a. planting the same crop b. rotating the crops
c. watering the crops d. spraying pesticide

3. Short Questions:

1) Write five uses of soil in our life.
2) What do plants need to grow?
3) What are the ways to maintain soil fertility?

4. Descriptive questions:

1) How can we prevent soil pollution? Explain
2) Why is soil important to living things? Explain
3) How can we conserve soil ?

5. Match the words on the left with the word on the right.

causes of soil pollution	crop rotation
prevention of soil pollution	destruction of the nature
soil fertility	littering garbage
effects of soil pollution	putting garbage in spacific place

Chapter 4

Food

1. Sources of food

We need food to survive. We get various foods from plants and animals in the environment.

QUESTION Which food comes from plants or animals?

Activity **Classification of food**

What to Do :

Let's . . .

1. make a table like the one shown below

food from plants	food from animals

2. make a list of food from plants and food from animals in the table
3. share the ideas with classmates

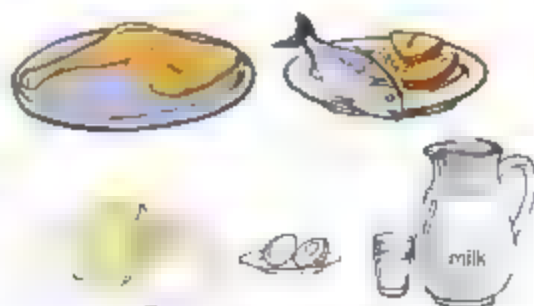
Summary

Food from plants

We get most of our food from plants. Plants give us vegetables, fruits, grains and pulses as food.

Food from animals

We also get many kinds of food from animals. Food from animals includes fish, meats, eggs and dairy products.

foods from plants

foods from animals

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2. Nutrients

We get various nutrients from food. There are five types of nutrients, carbohydrates, proteins, fats, vitamins and minerals. Along with these nutrients, water is also important to our body.

(1) Vitamins

Vitamins help make our body work properly. Vitamins strengthen our immune system. It supports growth and help our body parts such as eyes and bones to do their functions. There are six types of vitamins such as Vitamin A, B, C, D, E, and K. Vitamin B is made up of different types of vitamins that is called the vitamin B complex. Vitamins are found in foods like vegetables, fruits, meats, fish and dairy products.

food rich in vitamin A   food rich in vitamin B complex   food rich in vitamin C

Now, we will learn about different types, sources, functions and the diseases caused by deficiency of Vitamins

types	sources	functions	diseases caused by deficiency of vitamin
Vitamin A	carrots, spinach, pumpkin, small fish, milk, egg yolks, etc.	It helps for proper vision, healthy skin, strong teeth and healthy immune system	night blindness
Vitamin B complex	whole-grains, dairy products, fish, liver, green vegetables, beans, etc.	It helps body make energy	beriberi, mouth ulcer, anemia
Vitamin C	fruits such as guava, emblic, oranges, lemons and vegetables like tomatoes , cabbage and broccoli, etc.	It strengthens immune system and keeps body working and developing properly	scurvy, disease of gum
Vitamin D	egg yolks, fatty fish, sunlight, etc.	It is important in the growth and maintenance of strong bones	rickets, Osteomalacia
Vitamin E	vegetable oils, almonds, liver, etc.	It protects all blood cells from damage	muscle weakness, slow growth
Vitamin K	green leafy vegetables, okra, soybeans, etc.	It helps our body to stop bleeding	liver disease, poor blood clotting

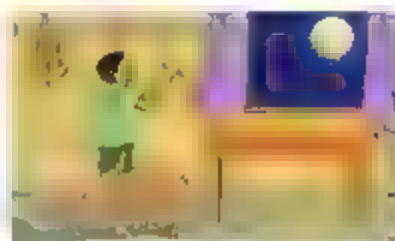
(2) Proteins

Proteins are used to form, repair and grow our bodies. We get proteins from plant and animal foods. Proteins come from the plant sources is called plant proteins. Peas, pulse, nuts and bean seeds are the sources of plant proteins. Similarly, proteins come from the animal sources are called animal proteins. Meats, fish, eggs and dairy products are sources of animal proteins.

food rich in plant protein

food rich in animal protein

(3) Importance of Nutrients

Nutrients are very important for our body. Lack of vitamins may cause different types of diseases such as night blindness, mouth ulcer, rickets, scurvy, and beriberi. Lack of protein also can cause growth failure and loss of muscle. We may get goitre caused by iodine deficiency. The best way to get enough nutrients is to eat a balanced diet with a variety of foods.

night blindness

rickets

iodine deficiency disease (goitre)

Discussion

- **Which foods are rich in proteins?**

Let's . . .

1. make a table like the one shown at your right.
2. make a list of foods rich in plant and animal proteins in the table.
3. share the ideas with classmates.

plant proteins	animal proteins

3. Balanced diet

A balanced diet is necessary for keeping our body healthy. A balanced diet is a diet that contains adequate amounts of all the necessary nutrients in order to keep our body healthy. We should take balanced diet everyday.

QUESTION How can we get low priced balanced diet easily?

Activity Selection of easily available and low priced balanced diet

What to Do :

Let's . . .

1 make a table like the one shown below

menus		
breakfast	lunch	dinner

2 make a list of balanced diet from easily available low priced foods the pictures below.

3. share the ideas with classmates

Safe food

Foods have to be safe Besides they should be balanced Rotten infected and impure foods are called unsafe foods It is important to keep food clean, fresh and covered to maintain food safety.

Summary

Food Types

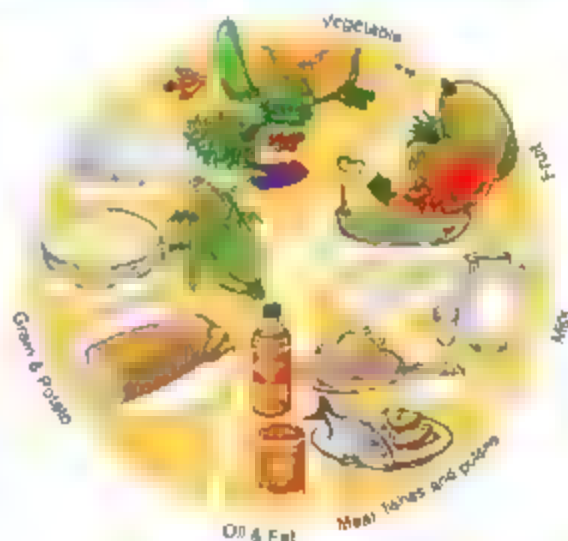
All types of food belong to different groups. There are many kinds of food in nature. These food are classified into many groups To stay healthy, we should eat the right amount of nutritious food from all types according to daily need of our body. This includes a balanced mix of all kinds of food items to meet our body's needs. We can get all nutrients from a variety of foods in each of these food types. Balanced diet

contains an adequate amount of all the necessary nutrients. We can select a balanced diet easily from the available low priced variety of food.

Food groups and its nutrients

food group	main nutrients	foods
Food grain & potato	carbohydrate	rice, wheat, potato, corn etc
Vegetables	vitamin, mineral	cauliflower, leafy vegetables, carrots, onions, tomato, okra, pumpkin etc
Fruits	vitamin, mineral	mango, berries, jack fruit, banana, apple, orange, grape etc
Meat fishes and pulses	protein	chicken, fish, eggs, nuts, beans, pulses etc
Milk & dairy products	calcium, vitamin	milk, cheese, yogurt etc
Oil and Fat	fat	ghee, butter, mustard oil, soybean oil etc
Deitary fiber	fiber	different types of vegetables, fruits, manually husked rice etc

A food plate

A picture of the plate helps us to make sure whether we get all the nutrients we need in each meal. The size of the proportions in the plate suggests the amounts of foods we should eat. According to the picture, we should eat vegetables and fruits about half of our plate. We should also drink plenty of water and can choose oil and fat group in a small amount.

a healthy eating plate

◆ **Do you eat balanced diet?**

1. Make a table like the one shown at your right.
2. Make a list of foods you had yesterday in the table.
3. Check if your meal is balanced diet or not, comparing the picture of 'a food plate'.
4. Share your ideas with your classmates.

food types	breakfast	lunch	dinner
Grain & potato			
Vegetables			
Fruits			
Meat fishes and pulses			
Milk & dairy product			
Oil & fat			

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EXERCISES

1. Fill in the blanks.

1) We get food from _____ and animals in the environment
2) The protein from meats, fish and eggs are called _____.
3) We have to eat _____ everyday to keep our body healthy.
4) Lack of vitamin A cause _____.

2. Put a tick mark (✔) on the correct answer.

1) Which food comes from animal?
   a. bread b. cheese
   c. biscuit d. almond

2) Which nutrient helps form, repair and grow our bodies?
   a. carbohydrate b. vitamin
   c. fat d. protein

3) Which food mainly includes carbohydrate?
   a. milk b. grain & potato
   c. vegetable d. meat & beans

3. Short Questions:

1) What are the sources of vitamin **C**?
2) What is the function of vitamin **A** ?
3) Name 3 diseases caused by lack of vitamins
4) What is vitamin B complex? Which food can we get it from?
5) What is safe food?

4. Descriptive Questions:

1) Why is a balanced diet important? Explain
2) Explain the best way to get enough nutrients.

5. Match the words on the left with the words on the right.

grain food	mango
vegetables	yogurt
fruits	soybean oil
milk and other dairy products	cauliflower
oil and fat	rice

Chapter 5

Hygiene

1. Healthy Lifestyle

It is very important for us to have a healthy lifestyle A healthy lifestyle helps to keep and improve our health and well-being

QUESTION **How can we keep ourselves healthy?**

Summary

The best way to stay healthy is to follow the rules of good health and maintain a regular healthy lifestyle The followings are good habits to keep our body healthy.

Eating balanced diet

We must have balance diet to maintain good health Every kind of food provides different nutrients that are necessary for our body. We should eat a balanced diet along with drinking enough safe water to maintain good health

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Regular exercises

Regular exercise and playing sports strengthens our heart, muscles and bones. It also makes us feel more confident and sleep better.

exercises playing

Adequate sleep

We need adequate sleep for recovery and growth of our body. We should have a regular bedtime for having a good sleeping.

Time to relax

We sould take some rest to get rid of tiredness and to regain energy for working ahead. A hobby like listening favourite songs, reading books, or working in the garden can help reduce our stress.

sleeping

Personal hygiene

We have to take care of our body to keep it neat and clean. We should take bath with clean water and soap regularly. We should wash hands before and after meals and brush our teeth after meals. We have to change clothes regularly and take care for the skin, hair, nails, eyes and ears.

It is important to balance all these habits rather than putting emphasis a single habit.

personal hygiene

Discussion

- **What are the good rules to keep ourselves healthy?**
  1. Make a list of your rules to keep your health in your notebook.
  2. Share your ideas with your classmates.
  3. Set the common rules in the class to be followed by all.

2. Waterborne diseases

Waterborne diseases are the diseases caused by taking water contaminated with germs

(1) Transmission of waterborne diseases

QUESTION : How do waterborne diseases spread?

Activity **Causes of water contamination**

What to Do:

Let's . . .

1. make a table like the one shown below

causes of contaminating water

2. make a list of the causes of contaminating of water in the table observing the pictures below
3. share the ideas with classmates

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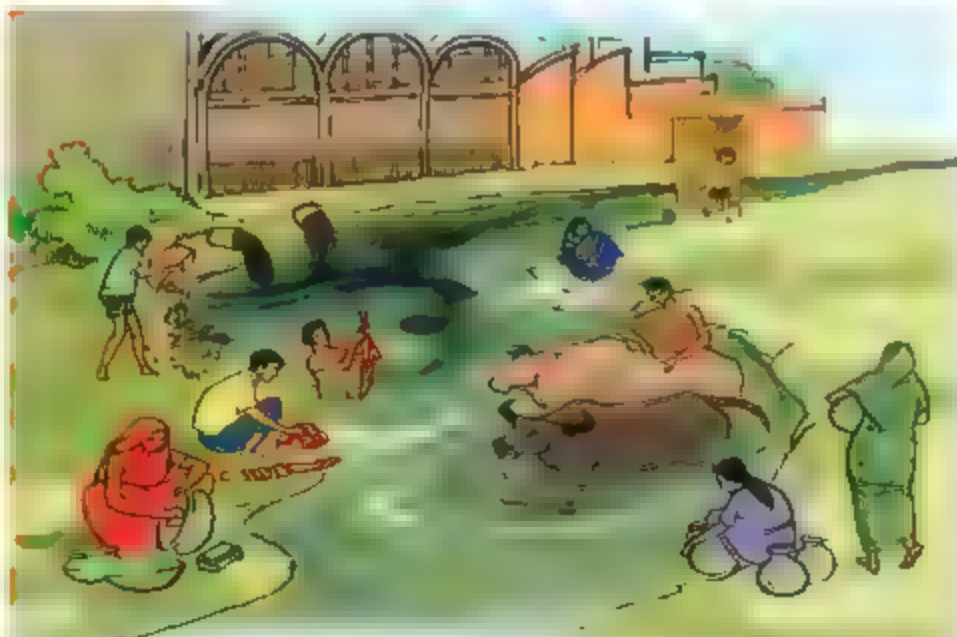
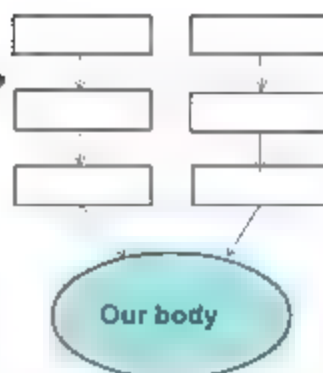
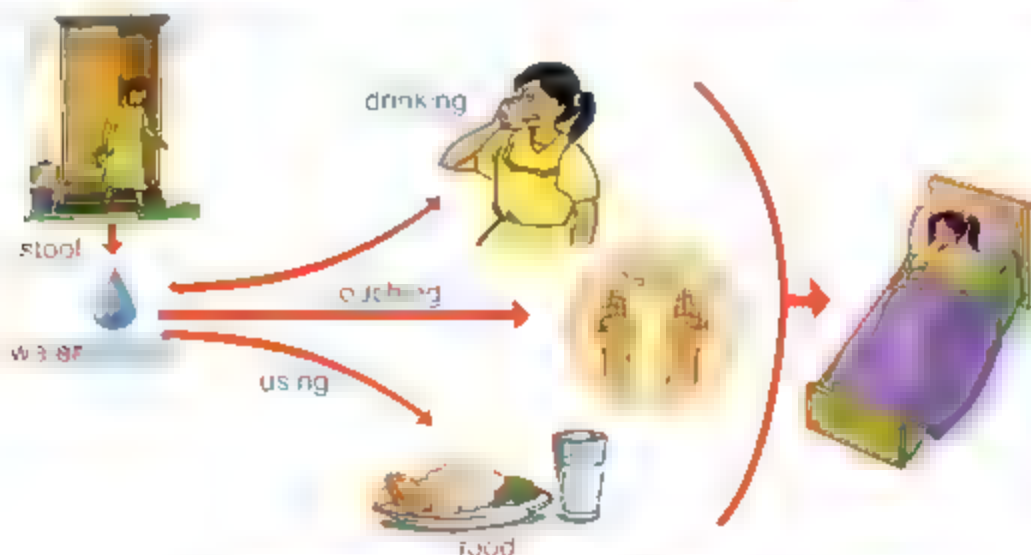

Discussion

◆ **How can contaminated water get into our body?**

1. Make a chart like the one shown right
2. Seeing the picture on previous page, make a flow chart of the path of contaminated water from the causes to get into our body.
3. Share your ideas with your classmates.

Summary

Water can be often contaminated by urine and stools of animals or people containing germs such as bacteria. We use water for drinking preparing foods, bathing, washing clothes, or brushing teeth We get waterborne diseases if we use contaminated water in these purposes Waterborne diseases are easily transmitted to people

contaminated water can cause diseases

transmission of germs from stool to our body

How to make saline

How to wash hands

(2) Types and symptoms of waterborne diseases

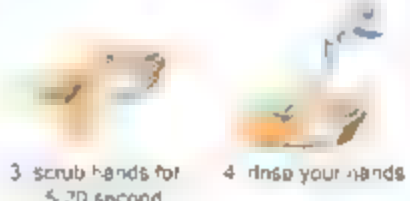
Contaminated water can cause many types of diseases, including diarrhoea, cholera, dysentery, jaundice and typhoid.

The symptoms of most waterborne diseases are loose motion, vomiting, fever and stomach cramps. If we suffer from diarrhoea, we should take oral saline. oral **saline** is available in markets. Besides, Oral saline can be prepared at home by using a pinch of salt and a handful of molasses or sugar with half litre of drinking water.

(3) Prevention of waterborne diseases

The best way to prevent waterborne diseases is to stop the transmission of germs. Some measures to prevent waterborne diseases are given below-

Use of safe water

We have to use clean and safe water for drinking, preparing foods, and bathing. We can prepare safe water by filtering, boiling and using water-purifying tablets.

Washing hands

We should wash hands with soap and safe water before eating, preparing food and after using toilets or playing.

Keeping toilets clean

We have to use hygienic toilet and to keep toilet clean after using it in order to prevent waterborne diseases.

◆ **What can we do to prevent waterborne diseases?**

1. Make a table like the one shown right.
2. Make a list of what we can do to prevent waterborne diseases in the table.
3. Share your ideas with your classmates.

what can we do?

2025

EXERCISES

1. Fill in the blanks.

1) Waterborne diseases spread through ___________ water.
2) Cholera, dysentery, and typhoid are _____ disease
3) A _____ lifestyle helps to keep and improve our health and well-being
4) We can prepare safe water by boiling, filtering and using _______

2. Put a tick mark (✔) on the correct answer.

1) When must we wash our hands?
   a. during eating b. before eating
   c. before using toilets d. during using toilets

2) What is an effect of moderate exercises?
   a. strengthening muscles b. providing nutrients
   c. causing diseases d. relief from stress

3) What should we take when we suffer from diarrhoea?
   a. milk b. vegetables
   c. fish d. oral saline

3. Short Questions:

1) Give two examples of the causes of waterborne diseases.
2) Give three names of waterborne diseases

4. Descriptive Questions:

1) How can we prevent waterborne diseases?
2) What are the good habits to keep our body healthy?
3) Describe how to keep ourself neat and clean.

5. Match the words on the left with the words on the right.

oral saline	keeping our body neat and clean
keeping toilet clean	relieving diarrhoea
relieve from stress	preventing waterborne disease
personal hygiene	listening songs, reading book

Chapter 6

Matter

There are different objects around us such as book, chair, table, cloths, plants, hills, dust etc Everything is made up of matter

1. Properties of Matter

Matter has different properties Weight, volume, size and shape are properties of matters

QUESTION What are the common properties of matters?

(1) Volume

Activity **Properties of Matter : Part 1**

What to Do :

Let's . . .

1. take a clear glass with water rubber band, some pieces of stones.
2. make a table like the one shown below

	(1) Before putting stone	(2) After putting stone	(3) After removing stone
The level of water line			

3. make the water line of glass with rubber band and draw that picture in the column (1) in the table.
4. put stones in the glass and observe the water line
5. draw the water line in the column (2) in the table
6. remove stone from the glass, and observe the water line
7. draw the water line in the column (3) in the table

put stone in the glass

remove stone from the glass

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Discussion

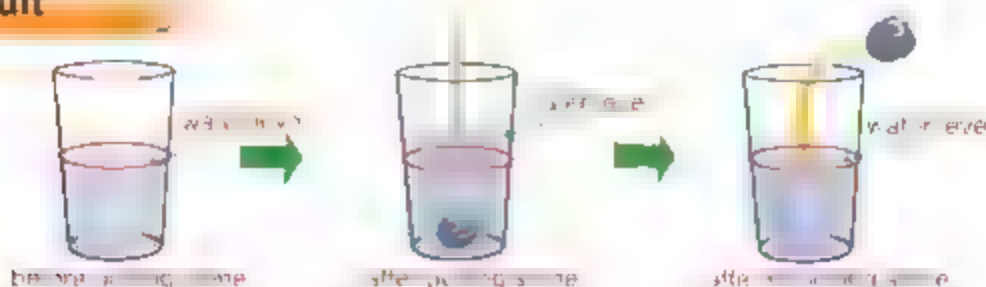
Let's

◆ **Think about the following points based on observation.**

1 What happened to the water line of the glass when you put stones in the glass?

2 What happened to the water line of the glass when you remove the stones from the glass?

3 From the results, can you guess what property do matters have?

Result

When we put stone into the glass of water, the level of water line in the glass rises. When we remove the stone from the glass, the level of water is lowered to the level of rubber band. From this result, we find that matters take up space of water in the glass.

Summary

Matter occupies space. For example, a textbook occupies a space on a desk. The area of space that matter occupies is called volume. Volume is a property of matter.

Matters take up space on a desk

The volume of a solid is measured in cubic centimetres (cm^3) or cubic metres (m^3). Liquid volume is often measured in milli litres (ml) and litres (L).

a solid matter

a liquid matter

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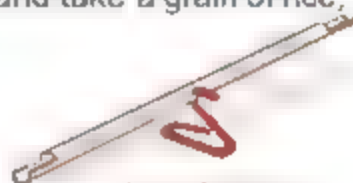
(2) Weight

When we hold something such as a textbook or a pen with a hand, we can feel its weight. What about small things such as a grain of rice or a small piece of paper? Can we feel their weight when we hold them? What do you think? Do you think that they have weight?

Activity **Properties of Matter : Part 2**

What to Do:

Let's . . .

1. prepare a straw beam balance, and take a grain of rice, and a piece of staple.

a grain of rice   a piece of staple   a beam balance

2. make a table like the one shown below.

	a grain of rice	a piece of staple
(1) your prediction		
(2) the state of balance		

3. hold one grain of rice in your hand. Next, hold a piece of staple in your hand. Does it have weight? Write your prediction in the column of (1) in the table.

4. put one grain of rice to one end of the balance.
5. observe what happened to the balance, and sketch the state of balance in the column of (2) in the table.
6. next, put a piece of staple to one end of the balance.
7. observe what happened to the balance, and sketch the state of balance in the column of (2) in the table.
8. share the ideas with classmates.

- **Think about the following points based on your observation.**
  1. What happened when you put objects at one end of the balance?
  2. Why do you think it happened?
  3. What do you find from the results?

Result

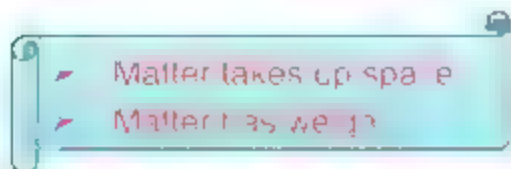
a piece of staple

When we put any object to one end of a balance, the balance will tilt towards the object even though the object is small. This result shows that matters have weight on the Earth.

Summary

The total amount of matter inside an object is called the mass of that matter. The force with which the earth attracts that object towards itself is called the weight of that object.

The unit of measuring mass is gram or kilogram (kg). And the unit of measuring force is newton.

General properties of most of the matters:

a scale

a balance

2. What is Air?

We cannot see air but air is all around us. We may feel air when a breeze blowing across our face.

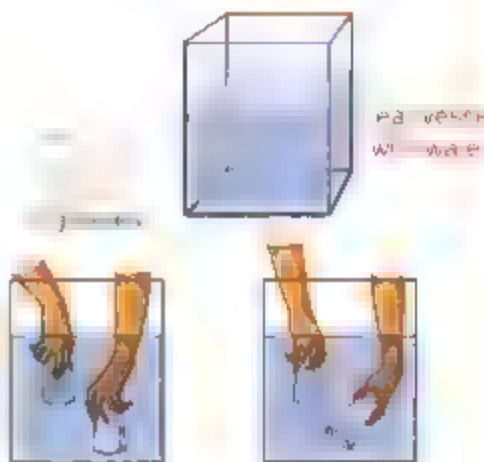
We can find air when branches and leaves of trees are moving

QUESTION What are the properties of air?

Activity **Properties of Air : Part 1**

What to Do :

Let's . . .

1. prepare 2 clear glasses and a vessel filled with water.
2. sink one of the glasses into the water and allow it to fill with water.
3. keep the glass upside down under water.
4. turn the second glass upside down, and push it under the water.
5. bring the second glass under the first glass and tilt it up slightly to begin pouring air into the first glass
6. observe what happened to two glasses, and keep a record of your observation on your exercise book.

Activity **Properties of Air: Part 2**

What to Do:

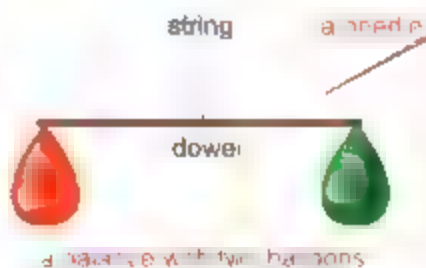
Let's .

1. prepare two footballs; one is inflated and another is deflated
2. push, hit and slam both of balls.
3. keep a record on what you feel and observe in your exercise book

Activity **Properties of Air: Part 3**

What to Do:

Let's . . .

1. prepare a beam balance, two balloons, and a sharp needle
2. blow up the two balloons until they are of equal size and tie them off.
3. attach each of the balloons to each end of the balance like the picture above.
4. make the beam balance perfectly horizontal
5. prick one of the balloons with a needle at its opening so that the air can pass out from it slowly.
6. observe what happens to the balance and the balloon
7. keep a record of your observation in your exercise book.

Let's . . .

- **think about the following points based on the activity of Part 1.**
  1. What happened to two glasses? Why?
  2. From this result, do you think what property air has?
- **think about the following points based on the activity of Part 2**
  1. What did you feel and observe when you played with two balls?
  2. From this result, can you find what property air has?
- **think about the following points based on the activity of Part 3.**
  1. Does the beam balance stay balanced? Why or why not?
  2. Which side is heavier? Why?
- **find what properties does air have from the above three activities?**

Result

Air takes up space in a glass

When we tilt up the second glass filled with air, it allows the air to escape from the glass. The air from the second glass is trapped by the first glass and the air forces the water out of the first glass. This result shows that air takes up space in the glass instead of water.

air in a ball opposes a pressure

When we hit and press an inflated ball, we feel a resistance from the ball. On the other hand, when we hit and press a deflated ball, we do not feel a resistance because there is no air in the ball. From this result, we find that air can oppose against a pressure.

When we prick one of the balloons with a needle, the balance will tilt towards an inflated balloon. Because the balloon still has air inside it and it is heavier than a deflated balloon. We get an idea that air has weight.

A balance tilts towards the balloon filled with air

Summary

Matter takes up space and has weight. From the results, we also find that air takes up space and has weight. Therefore, air is a matter. Air also opposes against pressure. Air has properties such as

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EXERCISES

1. Fill in the blanks.

1) The amount of space that matter takes up is called ______.
2) ______ is a measure of how strongly the Earth pulls a matter towards itself.
3) The unit to measuring weight is ______

2. Put a tick mark (✔) on the correct answer.

1) The common property of matter is

    a. colour   b. odour
    c. volume   d. texture

2) Which measuring device can be used for measuring weight?

    a. balance   b. ruler
    c. thermometer   d. measuring cup

3) What is the unit of measuring cooking oil?

    a. cm^2 (square centimetre)   b. L (litter)
    c. cm^3 (cubic centimetre)   d. m (meter)

3. Short Questions:

1) What are the three properties of air?
2) What do you mean by the weight of matter?
3) What is meant by the volume of matter?

4. Descriptive Questions:

1) Explain what is a matter?
2) Explain how can we prove through experiments that air is a matter?

5. An upside-down glass with some dry tissue paper attached is slowly pushed into a basin of water.

Answer the following question:

1. What will happen to the tissue paper? Why?
2. What property of air is shown in this experiment?

Chapter 7

Natural Resources

We use various materials according to our needs. Some of those materials directly come from nature. Again we make different materials by using natural things. A **natural resource** is something found on the Earth that is useful to us.

1. Types of Natural Resources

QUESTION **What types of natural resources do we use?**

Activity **Where do we get our necessary materials?**

What to Do :

Let's . . .

1. make a table like the one shown below

objects	materials used to make it
text books	
jewellery	
House	
car fuel	

2. make a list of the natural materials that make the object in the table.
3. share the ideas with classmates

Summary

We find that almost everything we use comes from natural resources. We use different types of natural resources for our life in many ways.

(1) Types of Natural Resources

Water Resources

Water is an important natural resource for us. We can get water from ocean, lake, river, pond, and rain. Water is used for drinking, washing, cooking and cultivating or farming. We get fish from river, pond, lake etc. We also use water current to generate electricity.

A river is natural resource

2025

Forest Resources

Forest trees are the main source of wood that we use in our daily lives. Woods i.e. trees are used to make building materials, furniture and paper. We also use trees as fuel to get heat energy.

We get different resources from Forest

Land Resources

We grow crops and raise livestock on land to get food. Again, we build our houses or buildings on land to live in. Soil is also used for making building materials and pottery.

Mineral Resources

Some natural resources such as rocks, minerals, oil, coal and natural gas are available under the ground. There are many kinds of minerals, such as gold, silver, copper and iron. Besides, limestone and marble are one kind of rocks. We use different types of rocks and minerals for making chalks, coins, and building materials. By burning oil, coal and natural gas, we get heat which is used for running factories, vehicles, cooking food and generating electricity.

Other natural resources

Sunlight and wind are also natural resources. We use those natural resources to get energy. Sun provides us with light and heat energy, and electricity can be produced from this light source. We also use wind to generate electricity.

2025

Types and Uses of Natural Resources

natural resources	uses of natural resources
water & water current	drinking, washing, cooking, producing crops and fishes, generating electricity
forest	building materials, wood, paper, furniture
land	growing plants, building a house, building materials, pottery
rocks and mineral resources	chalk, building materials, wire, coins, jewellery
oil, coal and natural gas	plastics, polythene, fuel, man-made fabrics, urea fertilizer, cooking, heating
air or wind	breathing, making foods for plants, inflating tyres, electricity
sunlight	growing crops, light, making foods for plants, electricity

(2) Natural Resources in Bangladesh

We can find many types of natural resources in Bangladesh. Plants and animals, air, water, soil, and sunlight are available in Bangladesh. We also get natural gas, coal, and some mineral resources and rocks such as silicon, zircon, limestone, and hard rock in our country.

(3) Classification of Natural Resources

Natural resources can be classified into renewable and non-renewable resources. Natural resource does not run out and can be repleced by nature to use again is called a renewable resource. Sunlight, air, water, and plants are examples of renewable resources. On the other hand, natural resources that are depleted once used and can not be repleced even after thousands of years are called non-renewable resources. Natural gas, oil, coal, and minerals are examples of non-renewable resources.

non-renewable resources

Discussion

◆ **What kinds of natural resources do we have?**

1. Classify natural resources into renewable and nonrenewable resources in the table shown right.
2. Share your idea with your classmates.

renewable resources	nonrenewable resources

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2. Uses of natural resources to generate energy

Natural resources provide energy that we need for our daily life. **Energy** is the ability to do something Energy can move something, make sound and produce light and heat.

QUESTION **How do we get energy from natural resources?**

Activity **Energy from natural resources**

What to Do : Let's . . .

1. make a table like the one shown below

natural resource	Types of energy obtained
oil	
natural gas	
sunlight	
wind	
water current	
coal	

2. make a list of types of energy from natural resources in the table.
3. share the ideas with classmates

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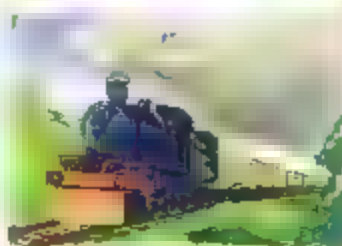

Summary

People use some natural resources to get energy. Anything that people use to produce energy is called a source of energy. For example, sunlight , wind, water current, oil, coal and natural gas are sources of energy.

Sunlight

The sunlight is an important energy resource. People use solar panels to get energy from the Sun. Solar panels are devices that transform sunlight into electricity. We may have seen solar panels on the roofs of houses or on a calculator.

Wind

Wind is one of the most promising energy resources. People use wind to produce electricity. When the wind turns the blades of a wind turbine, it spins a generator and produce electricity.

Water Current

Water current is the most widely used energy source. The current of water turns the turbine connected to a generator and produces electricity.

Oil, Coal and Natural Gas

Oil, coal and natural gas are non-renewable resources. They are called **fossil fuels**. When they are burned, they produce heat. The heat is used to cook food, to run vehicles, to produce electricity and to warm houses in the cold countries.

3. Conservation of natural resources

Conservation is the preserving and wise use of natural resources

QUESTION : How can we conserve natural resources?

Activity **Making Paper Bag**

What to Do : Let's . . .

1. prepare one piece of both sides written papers and gum
2. make a paper bag following the steps below

3. make a list of uses of paper bag.
4. share the ideas with classmates.

Summary

Natural resources are limited So we need to conserve natural resources There are many ways that we can conserve natural resources

Reducing the Uses of Resources

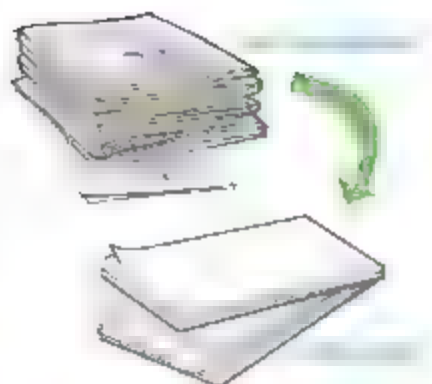
The best way to conserve natural resources is being economical while using natural resource We can conserve natural resources by reducing consumption of energy and producing less amount of trash. For example, we can turn out gas burner after cooking

Reusing Resources

E) From the above activity, we have learned how to reuse resources by making paper packets from used paper By reusing items, we can reduce waste and conserve natural resources An item should be recycled or used multiple times before throwing away. If something is broken, we should try to repair it instead of throwing it away or buing a new one

Recycling Resources

Newspapers can be recycled

Recycling means using old materials to make new things. If we recycle, we do not have to use more natural resources. For example, by recycling paper, we can reduce the number of trees cut down a year because paper is made from trees.

Using Renewable Resources

People get most of electricity mainly from non-renewable resources such as oil, coal, and natural gas. However, non-renewable resources cannot be replaced once they have been used up. Instead, we should use renewable resources such as sunlight, wind, and water current.

Changing Behaviours

turning off lights

The best way to conserve natural resources is to change our behaviours. We can reduce our energy use by turning off lights when they are not needed. We can reuse paper by writing on both sides of paper. We can also recycle the used cans or the old aluminum to make new things.

Discussion

◆ **What will we do for conserving natural resources?**

1. Make a list of what we will do for the conservation of natural resources in the table shown right.
2. Share your idea with your classmates.

what we will do

EXERCISES

1. Fill in the blanks.

1) A ____ is a material found in nature that is useful to people
2) Gold, silver, etc. are ____ resources
3) Oil, coal, and natural gas are ____ fuel.
4) Through ____ ,old things can be reproduced into new things
5) Wind and water current are used to generate ____

2. Put a tick mark (✔) on the correct answer.

1) Which natural resource is renewable?
   a. oil — b. sunlight
   c. natural gas — d. coal

2) Which device can change sunlight into electricity?
   a. generator — b. windmill
   c. solar panel — d. gas stove

3) Which one is the most widely used for energy resource?
   a. wind — b. water current
   c. sunlight — d. natural gas

3. Short Question:

1) Name four types of natural resources
2) What natural resources are available in Bangladesh?

4. Descriptive Question:

1) How do we get energy from natural resources?
2) Explain two ways that we can conserve natural resources
3) Why is it important to increase the uses of renewable energy?

5. Match the words on the left with the words on the right.

gold	non-renewable resource
river	mineral resource
sunlight	water resource
natural gas	renewable resource

Chapter 8

The Universe

What do you see when you look at the sky? In the day sky, we see the sun and clouds. Again, in the night sky, we see clouds, the Moon and countless stars.

1. The Moon

QUESTION How does the shape of the Moon change?

Activity **Observing the moon**

What to Do : Let's . .

1. look at the night sky, and observe the Moon with adults.
2. make a table in your exercise book like the one shown below.

11th Sep	12th Sep	13th Sep	14th Sep

3. continue to observe the Moon and to draw the shape of it everyday for two weeks.

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Summary

What is the Moon?

Each of the objects that rotates around the Earth is a satellite of the Earth. Among them, there is only one natural satellite; its name is Moon. Apart from this, thousands of artificial satellites are orbiting the earth. The Moon is a large round-shaped object made of rock. The Moon has no light of its own. We only see the Moon when the sunlight falls on the Moon. With the help of a telescope, we can see hills, mountains, valleys etc. on the Moon.

Moon Phases

If we observe the Moon every night, we will see that the size and shape of the Moon is slightly different from the previous night. Sometimes the Moon appears large and round. Again, sometimes it appears small and half round shaped. This changing shape of the Moon's bright part is the phase of the Moon. Moon has eight phases or periods. The Moon returns to its previous phase after about 29 days and a half.

eight phases of the Moon

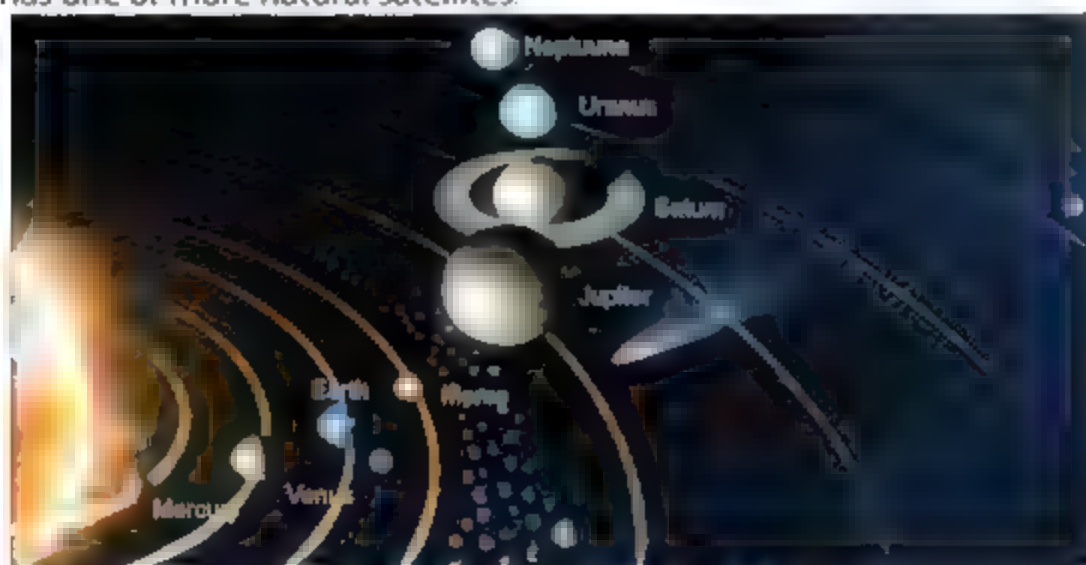
2025

2. The Solar System

What is the Solar System?

The solar system is made up of the Sun, all the planets and other objects such as asteroids, comets, dusts, and gas that rotate the Sun. Each of the large objects in space that moves around the Sun is a planet. A planet does not have its own light. Our Earth is a planet of the solar system.

Planets in the Solar System

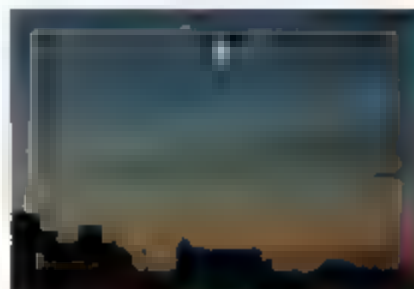
There are eight planets in the solar system. The planets in order of their distance from the Sun are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Each of these plantes except Mercury and Venus has one or more natural satellites.

Try it !

Observing Planet : Venus

Have you ever seen any Planet?

We can see Venus in the sky either in the West in the evening known as the Evening Star or in the East before the sunrise known as the Morning Star. Venus is the brightest planet in the solar system that we can observe

Evening Star

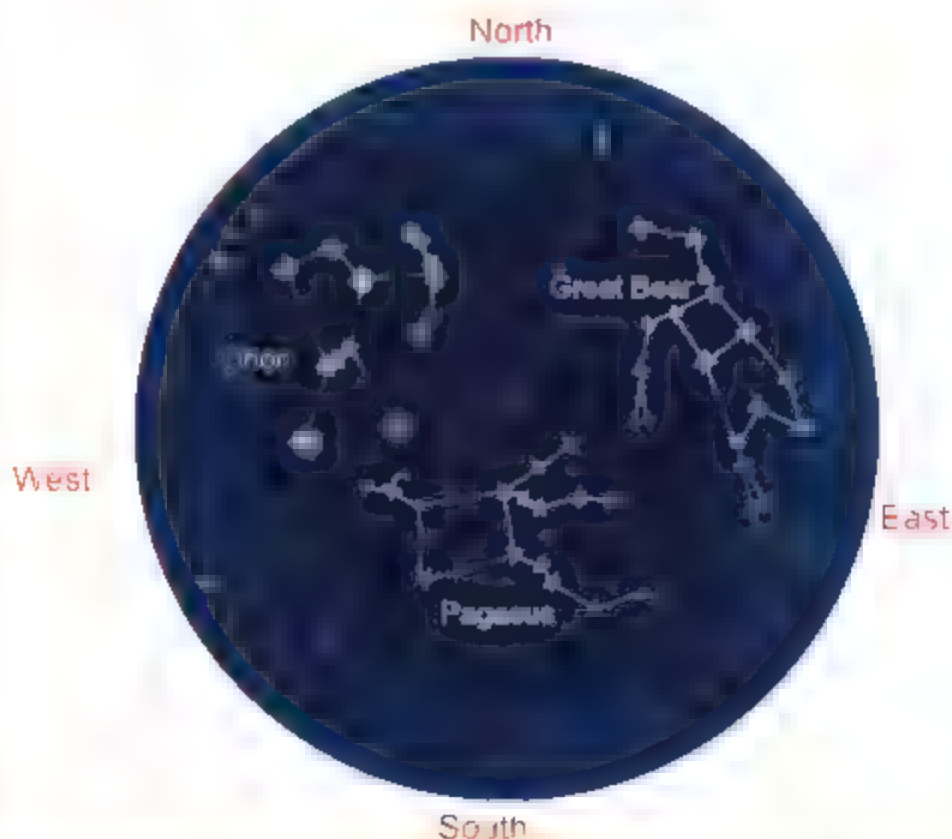
2025

3. The Galaxy

When we look at the night sky, we can see not only the Moon and planets but also many stars

QUESTION **What is the galaxy?**

Activity **Observing stars**

What to Do : Let's . .

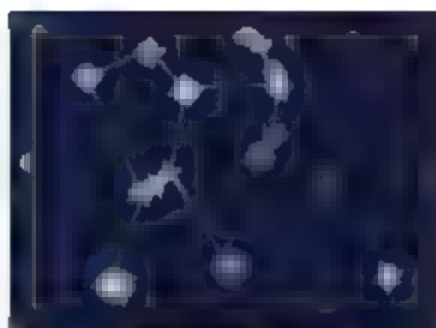
1. look at the night sky, and observe stars with adults.
2. find the constellations shown in the picture below.
3. make a record of the name of constellations you found in your exercise book.

Summary

Stars

A **star** is a huge ball of burning gases that gives off light, heat, and other energy. The Sun is a star in the solar system. Other stars look much smaller than the Sun because they are far away from the earth.

The constellation

There are numerous stars in the sky. We observe that stars form patterns in the night sky. A pattern of stars with shapes like an animal, person, or object is called a **constellation**. Orion is such kind of a constellation.

The Sun is a star

Galaxies

The Sun and the Sun's planets are parts of the Solar System. Again, the solar system belongs to a galaxy. A galaxy is a large collection of stars. The galaxy that the solar system belongs to is called the Milky Way. The stars or planets we see at night belong to this Milky Way. The Milky Way looks like a spiral.

Milky Way galaxy

The Universe

No one knows for sure how big the universe is. The **universe** is made up of everything that exists, including galaxies, stars, planets, space, all matter, and energy. There are billions of galaxies in the universe. Scientists believe that the universe is expanding with the time.

EXERCISES

1. Fill in the blanks.

1) The _____ is a object in the solar system that moves around the Earth.
2) The sun is a ______ that has light, heat and other energy of its own
3) Our Earth is one of the planet in the _____
4) The   is made up of everything that exists, including countless galaxies, stars, planets, space, all matter and energy

2. Put a tick mark (✔) on the correct answer.

1) Which one is a star?
   a. Earth   b. Mercury
   c. Sun   d. Moon

2) Which planet does move around between the Sun and the Earth?
   a. Mars   b. Venus
   c. Jupiter   d. Saturn

3) How many planets are there in the solar system?
   a. seven   b. eight
   c. night   d. ten

3. Short Questions:

1) Why do other stars look much smaller than the Sun?
2) What is a galaxy?
3) What is a constellation?

4. Descriptive Questions:

1) Explain the phases of the Moon
2) What are the differences between planets and stars?
3) What are the components of the solar system?

5. Match the words on the left with the words on the right.

the Earth	galaxy
the Sun	satellite
Milky Way	star
the Moon	planet

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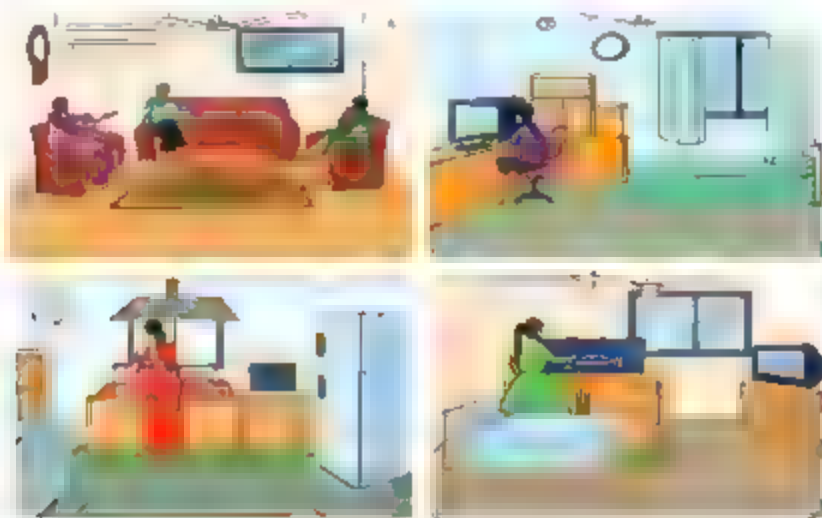
Chapter 9

Technology in Our Life

By using tools or techniques for controling the environment and finishing necessary task is known as technology. Technology makes our life better, easier and comfortable. The picture below shows the technology used at a house. Can you find these technology?

technology in a house

1. Technology in Daily Life

QUESTION **What technology do we use in daily life?**

Activity **The uses of technology**

What to Do: Let's . . .

1. make a table like the one shown below

using sectors	technology
home	
sports	
entertainment	
medical treatment	

2. make a list of the technologies that are used at home, in sports, entertainment, and medical treatment in the table.
3. share the ideas with classmates

2025

Summary

We use technologies in different ways in our daily life

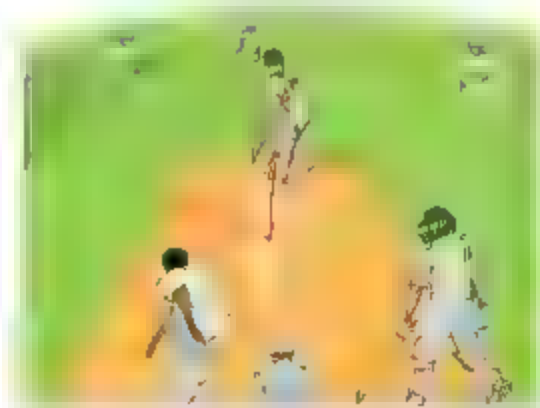
Technology at Home

We can see the use of technology in different equipment at home. These include electric light, electric iron, electric fan, television, radio, mobile phone, computer etc. Technology is also used in kitchen equipment such as gas burner, refrigerator, rice cooker, microwave oven, etc.

computer telephone television

Technology in Sports

Many types of technologies are used in sports. Uses of technology in sports includes footballs, tennis rackets, cricket bats and balls, clothing and footwear. At present video cameras are also used in a variety of sports.

sporting equipments

using video camera in sports

Technology in Entertainment

musical instruments

We use various technologies for entertainment in our daily lives. Computer technology is one of them. Using a computer, we can play different kinds of games, watch movies or dramas and listen to music. Technology is also used in various musical instruments, such as the tabla, harmonium, guitar, violin, piano and drums, as well as CD and DVD players, etc. Additionally, amusement parks offer various types of rides, such as merry-go-round, roller coasters, etc. Besides, children's toys and drawing materials are also examples of the use of technology in entertainment.

amusement rides

Technology in Medical Treatment

Advancements in medical technology have allowed doctors to better diagnose and treat their patients. Many types of medical devices have been developed. Thermometer, stethoscope, and blood-pressure meter are examples of simple medical devices. The advanced devices such as X-ray machine, electrocardiogram, ultrasonography, and computerized tomography are also used to examine internal organs. The development of medical technology has made significant contributions to improve the health of people all around the world.

stethoscope

computerized tomography

ultrasonography

2. Technology in Agriculture

QUESTION **How do we use technology in agriculture?**

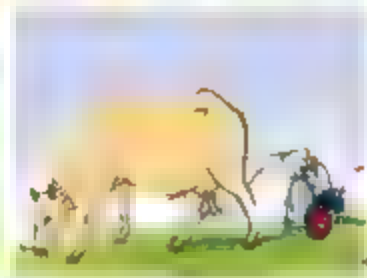
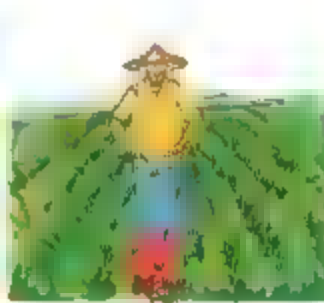
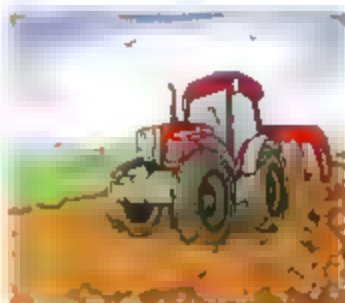
Activity **Uses of technology in agriculture**

What to Do : Let's . . .

1 make a table like the one shown below.

agricultural Sector	technology
dairy farm	
paddy field	
fruit farm	
vegetable field	

2 make a list of the technologies that are used for agriculture in the table

3 share the ideas with classmates.

Summary

Technology has played an important role in agriculture. The summary on the use of technology in agriculture is given below.

Agricultural Equipment

Different types of agricultural equipment have been developed. Tractor, cultivator, planter, sprinkler, irrigation pump, harvester, and milking machines are examples of agricultural equipment. It allows a small number of people to grow and to process a lot of food in a shortest period.

tractor

milking machine

irrigation pump

Production of Crops

The modern agricultural technology is applied for the production of crops that resist diseases and pests, and grow very fast. Rice, wheat, and potato are the examples of crops that are improved by technology. Those new types of crops help farmers increase the amount of production of crops and reduce their workload.

Other Technologies in Agriculture

Technology is introduced to collect forest resource and to invent new variety of plants. We can use chain saw to cut down the trees and collect wood easily. Technology is used to invent plants with special trait. For example, plant breeding helps us produce the beauty of many different colours of flowers in a species. Those colourful flowers are used for decorating a room or beautifying our environment.

cutting trees with a chain saw

beautifying environment with flowers

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EXERCISES

1. Fill in the blanks.

1) ______ makes our life better and comfortable
2) Cricket bat is a technology used in the field of ______
3) Advancements in ______ technology have allowed doctors' to diagnose disease easily.

2. Put a tick mark (✔) on the correct answer.

1) Which one is a agricultural equipment?

a. irrigation pump b. violin
c. cricket bat d. roller coaster

2) Which one is the simplest medical device?

a X-ray machine b electrocardiogram
c. ultrasonography d thermometer

3. Short Questions:

1) Write down the names of 5 sports materials in which technology is used
2) What kind of technology are used for entertainment?
3) What are the advantages of medical technologies?

4. Descriptive Questions:

1) How can development of agricultural technology help us?
2) Explain how technology at home makes our life more comfortable

5. Match the words on the left with the words on the right.

agricultural technology	football
medical technology	tractor
sports technology	video game
technology at kitchen	stethoscope
entertainment technology	gas stove

6. Using the words in the box, write down three sentences about agricultural technology.

disease resistant	advanced technology	high yielding	crops

Chapter 10

Weather and Climate

A weather forecast might say, 'The amount of rainfall may increase' or 'Light fog is likely' or 'A change in temperature is unlikely'. Weather describes the daily condition of the sky and atmosphere. For example, the sky might be sunny or cloudy and the air could be hot or cold, wet or dry.

1. Daily Weather

We know different types of weather. For example, we experience sunny day and rainy day as shown below.

sunny day

rainy day

QUESTION **What do we mean by weather?**

Activity **Weather Components**

What to Do : Let's . . .

1. make a table like the one shown below.

Component of weather
rainfall

2. make a list of components of weather in the table.
3. share the ideas with classmates.

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Summary

Weather Components

Weather can be described by sky conditions, temperature, humidity, and wind. Those are called **components of weather**

Sky Conditions

We can find different types of weather in weather forecasting section in the newspaper or the Internet. Bangladesh Met Office uses weather icons to present different type of weather as shown below

sunny	partly cloudy	rainy	thunderstorm

In Bangladesh thunderstorm in Summer and rainfall in Rainy season is common. Also, fog is common in winter and haze is common in dry season.

Temperature

Some days we feel cold and other days we feel hot. Temperature describes how cold or hot the air is. We might say "A sunny hot day" or "A sunny cold day" when describing the weather

Humidity

When the air feels wet and sticky, we describe the weather as humid. Humidity is the measurement of the amount of water vapour in the air. Higher humidity makes us sweat more easily. Again, low humidity makes the air feel dry. We use the terms "humid" and "dry" to refer to these weather conditions.

Wind

Wind is moving air. Wind can be strong or weak (light). Wind can be measured by its direction and speed. Wind direction is the direction from which wind originates. For example, a northerly wind blows from the north to the south. Wind strength can be easily described by observing hoisting school flag, trees and so on

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2. Weather Observation

We have already known about the weather components. Are those components changing every day? Let's observe!

QUESTION **Does weather change every day?**

Activity **Collecting Weather Data**

What to Do : Let's . .

1 make a table like the one shown below

components of weather	[illegible]	1st day	2nd day	3rd day	4th day	5th day
Condition of the sky	[illegible]					
cloud	[illegible]					
temperature						
wind direction	[illegible]					
wind strength	[illegible]					

2 observe the Condition of the sky, cloud, wind direction and strength, and write the information in your note book

3. measure air temperature and write down in your notebook.

4 share the ideas with classmates

Discussion

◆ **Discuss the following questions in the class.**

1 Which weather component is changed most?
2. Which weather component is the most important for our daily life?
3. Can you relate any weather component to any incident?

Are there any relationships among weather components?

I think thick and grey cloud makes rain

2025

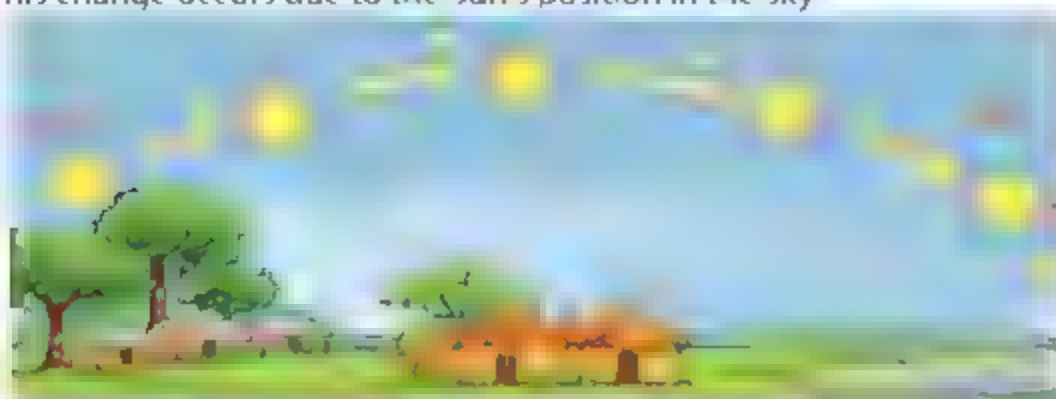
Summary

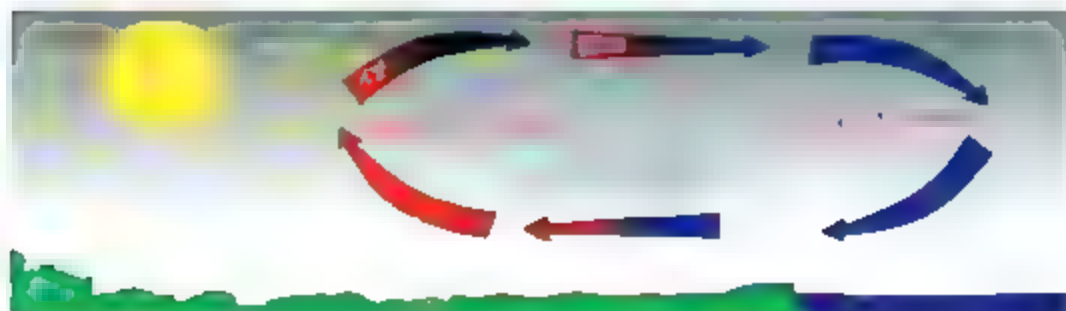
Weather is the temporary state of sky and air of an area. Weather is changing every day We do not experience same weather all the time. Weather changes due to various factors.

Causes of weather Changes

(1) Temperature Change

When the sun rises in the morning, air becomes warmer and temperature goes up When the sun sets, the air becomes cooler and temperature goes down This is called diurnal change of temperature This change occurs due to the Sun's position in the sky

The Sun's position in the sky [illegible]

(2) Wind

Wind causes weather changes. For example, cloud of a certain area is blown to other area by wind. Wind also make the sky clear by moving the cloud The wind blows due to defference in temparature of two areas. Sometimes strong winds become storms or cyclones.

formation of air flow

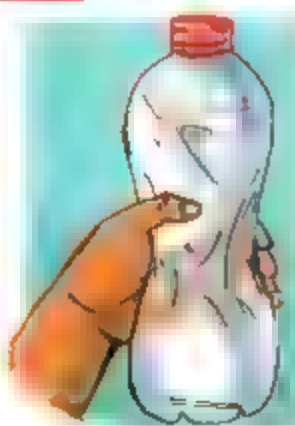
3. Cloud and Rain

QUESTION **How are cloud formed?**

Activity **Making cloud in a plastic bottle**

What to Do : Let's . . .

1. prepare a clear plastic bottle.
2. add a small amount of warm water to the plastic bottle
3. put the cap and shake it up so that water droplets are sticking to the inside of the bottle. Pour out the excess water. Water is the first ingredient for cloud formation
4. carefully light a match and shake it up so the match burns out with help of your teacher. Then drop it into the bottle. Immediately replace the cap and shake it back and forth 2-3 times. The smoke adds dusts as the second ingredients for cloud formation
5. using both hands, squeeze the center of the plastic bottle as hard as we can, and then release both hands evenly and very quickly. We are now simulating the third ingredient temperature and pressure changes.
6. after several squeezes we could see a cloud that appears when you release your hands

Be careful when a match is lighted.

squeezing

releasing

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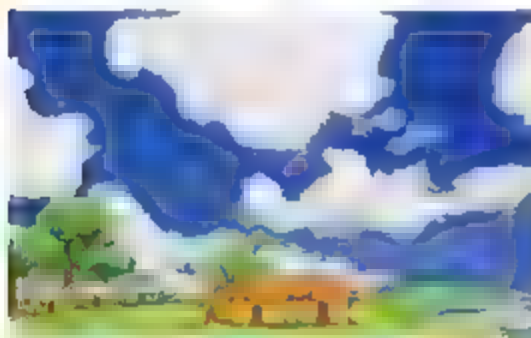
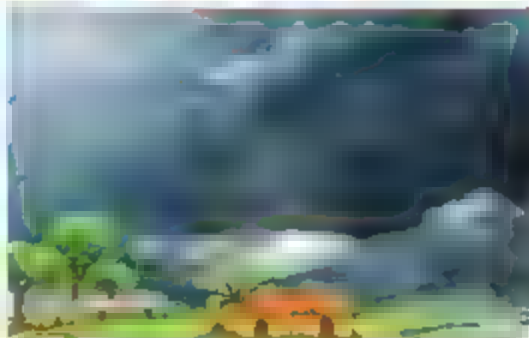
Summary

Cloud

Sea or river water evaporates due to the heat of the sun and it becomes water vapour. When water vapour in the air is cooled, water vapour condenses on a tiny dust to form a small water droplet. These small water droplets float in the sky as a cloud. We can see many kinds of clouds. Clouds are classified by their shape and their height above ground. Fog is a kind of clouds that you can feel or touch at the ground. When fog accumulated on something like leaves or grass and form tiny water droplet then it is called dew. Whereas haze is made from dry particles such as dust

Rain

Small cloud droplets aggregate into a big water drop. Big water drops cannot float in the sky and then fall on the earth as rain. Sometimes we see hails drop during rain. Hail is a type of frozen rain in the form of balls or irregular lumps of ice.

4. Weather and Climate in our Life

QUESTION How does weather affect our life?

Activity **Identifying effects of weather**

What to Do: Let's . . .

1 make a table like the one shown below

effects of good weather	effects of bad weather

2 List up effects of good and bad weather
3 share the ideas with classmates

Rain provides water needed for all plants and animals

Heavy rainfalls cause floods!

Summary

Weather and our life

Weather affects our life in various ways. We put on warm clothes when it is cold. We go out with an umbrella in a rainy day or in a sunny day. Rainfalls provide us water resource. Plants become fresher and crops grow well with the help of rain water. However, all types of weather do not always bring good results.

Flood

What happens when it rains heavily for a long time? Where does the water go? Water from river spills on to the land and then roads go under water. Crops go under water. Houses may also go under water. This situation is flood.

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5. Climate

QUESTION What is climate?

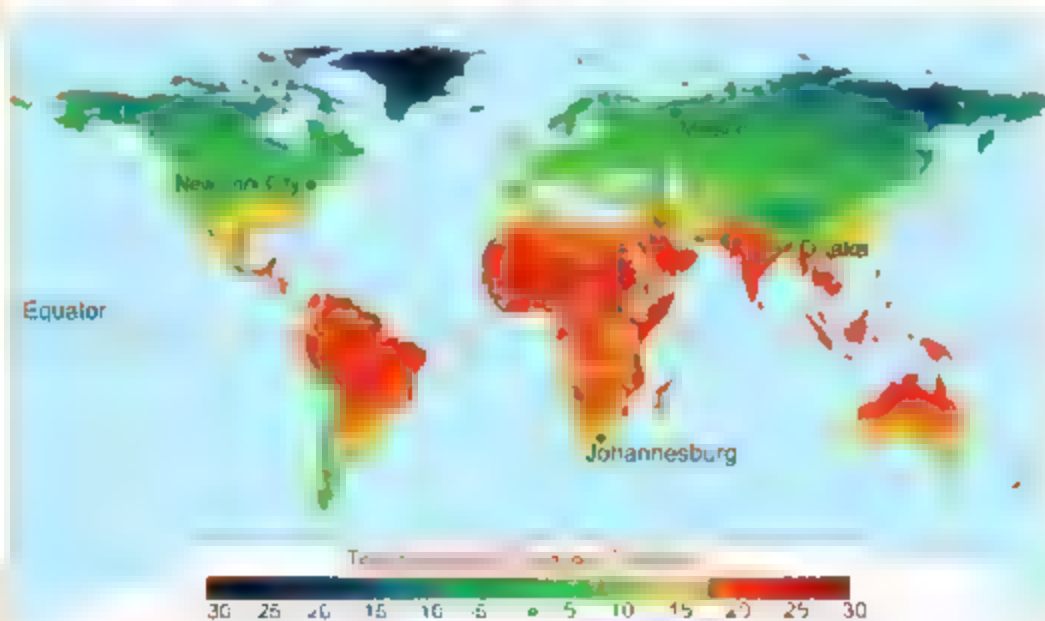
Activity Distribution of Temperature on the Earth

What to Do : Let's . . .

1. make a table like the one shown below

country	mean temperature (degree celsius)
Dhaka, Bangladesh	26

2. the picture below shows the distribution of temperature on the Earth
3. looking at the picture below, make a list of your findings about temperature distribution in the table
4. share the ideas with classmates

2025

Summary

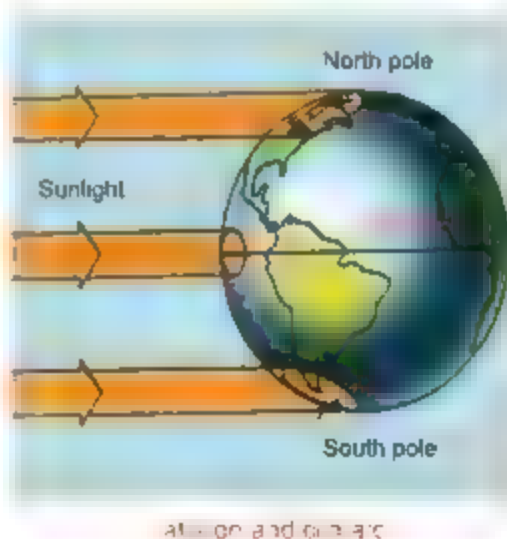
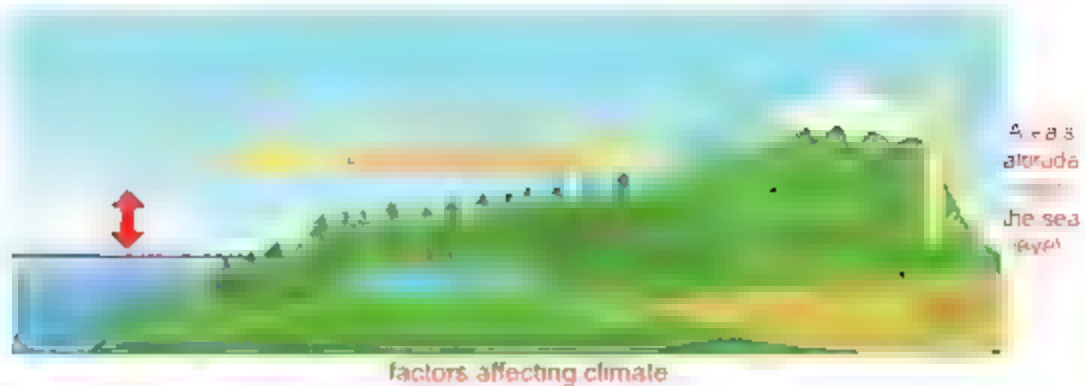
Climate

Weather may change every day but there is a usual weather pattern. We call this usual weather pattern as our climate. Climate is the average weather condition on an area for many years.

The annual average temperature of Dhaka in Bangladesh is 26°(degree) Celsius. In general, the climate of Bangladesh is classified as hot and humid climate. Russia is situated to the farthest north of Bangladesh. This country is extremely cold in the most of the time of the year. The annual average temperature of Moscow in Russia is 6°(degree)Celsius. The climate of Russia is classified as cold climate.

Yearly and Monthly Average Temperature at Dhaka and Moscow (Degree Celsius)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Dhaka	19	22	27	29	29	29	29	29	29	27	24	20	26
Moscow	-7	-7	-1	7	13	17	19	17	11	6	-1	-5	6

The climate of a particular place mainly depends on its latitude, height above sea level and distance from the sea. Latitude refers to a location's angular distance from the equator. Near the equator, the Sun's rays fall on the Earth vertically. So, the area of the earth's surface near the equator is hotter. As the earth's surface is round, places far from the equator are heated relatively less by the Sun's rays. As a result, all these places are relatively cool. The higher the value of latitude, the cooler the climate.

factors affecting climate

In Bangladesh, there are six seasons such as Summer, the Rainy season, early Autumn, late Autumn, Winter and Spring. In Bangladesh Summer consists of *Baishakh* and *Joystha* and it is the warmest season of the year. The Rainy season consists of *Ashar* and *Shraban* and it comes with heavy rainfall. Eearly Autumn consist of *Vadra* and *Ashwin*. White and fluffy clouds are seen in the sky in this season. *Kartik* and *Agrahaon* are the late Autumn. This is the season of harvest. *Pous* and *Magh* are Winter when we usually feel cold in Bangladesh. Then gradually the cold is relieved and the weather is getting warmer in Spring months, *Falgun* and *Chaitra*. This is the usual pattern of Bangladesh's climate. Year after year we are experiencing the same climate.

The seasons in Bangladesh differ from those in other countries in the northern hemisphere. In some countries, there are only four seasons: summer from June to August, autumn from September to November, winter from December to February and spring from March to May.

EXERCISES

1. Fill in the blanks.

1) ___________ is the usual weather pattern for a long period of time at a particular area
2) The small droplets of cloud aggregate into ___________
3) Bangladesh is covered with fog in ___________.
4) ___________ is necessary to grow good crops.

2. Put a tick mark (✔) on the correct answer.

1) Which one is not the component of weather?
   a. temperature b. humidity
   c. latitude d. wind
2) What is the main cause of the change of weather?
   a. Rain b. Fog
   c. Wind d. Cloud
3) From which cloud is formed?
   a. air b. sunshine
   c. dew d. water vapour
4) Which one determines the climate?
   a. equator b. distance from the Sun
   c. Moon d. distance from the sea

3. Short Questions:

1) Write the names of the components of weather
2) What is humidity?
3) What is the difference between fog and dew?

4. Descriptive Questions:

1) Describe the climate of Bangladesh.
2) Explain how clouds are formed.
3) What are the problems of heavy rainfall?
4) What are the differences between weather and climate?

5. Match the words on the left with related words on the right.

temperature	strong or calm
humidity	hot or cold
wind	heavy or light
rainfall	wet or dry

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Chapter 11

Life Safety and First Aid

Accident happens suddenly It causes injury and damages our wealth We often hear about or see accidents We might have accident ourselves now and then.

QUESTION **How can we prevent accident around us?**

Activity **Accidents in our life**

What to Do :

1 make a table like the one shown below

dangerous situation or accident

2 find the potential dangers in the picture below, and make a list in the table.

3 share the ideas with classmates.

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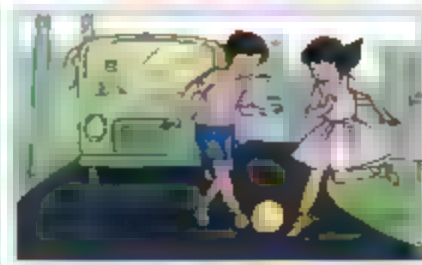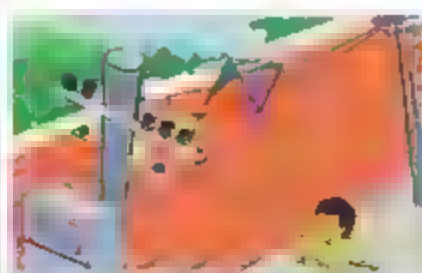
Summary

Accidents can happen anywhere in and around at home, school, road or in the playground.

(1) Types of Accident

Common types of accident that we fall are cuts, choking, fires, burns, electric shock, and poisoning. We may have other accidents such as traffic accident, bites with snakes, and drowning in water

(2) How to Prevent Accident

Most of the accidents are preventable Examples of how to prevent accidents of drowning, snakebite, and fire are given below

Drowning in Water

We all enjoy swimming and bathing in a pond, a canal, or a river We also hear of drowning in many places in our country every year We can prevent ourselves from drowning by learning how to swim We should not swim alone without help of the older and should not dive under water We also should keep an eye on others while we play in water

drowning in water

Snake Bites

People in the villages are often bitten by snakes in our country. Snakes live not only in bushes and forests but also around our houses

We can avoid snakebites by taking the following steps

- Never try to handle a snake.
- Avoid places where snakes may live like tall grass or bush, rocky areas, and holes in the ground
- Use a long stick if we must go into tall grass or bush
- Shine a flashlight on your path when walking outside at night.

snake bite

- Keep your yard tidy to reduce places where snakes hide

Fire Accident

We may have fire accidents in our daily life. We may get injuries such as burns when we cook for food or touch hot objects such as a stove. Fires may occur due to lack of attention when cooking, careless use of candles or lamp, short circuits of electrical appliances. Fires may occur due to throw burning beedi, cigarettes, safty match in unsafe areas or if the children play with match or lighter.

Fire accident

The followings are different ways to prevent fire accidents.

- Don't play near the stove and never play with fire.
- Don't wear clothing with long, loose sleeves when cooking.
- Keep flammable objects such as clothes, paper, dry wood etc. away from heat and flames.
- Don't overload wall outlets.

If we have fire accidents, we should extinguish fire in its initial stages. We can put off a fire by using a fire extinguisher, covering a fire with a wet blanket, or pouring water at the base of the fire. If fire becomes big and severe, we should evacuate the building. Contact the fire station near by as soon as possible. Do not fight alone with fire. Personal safety comes first. Then you have to come forward to help others.

putting off a fire with extinguisher

evacuating the building

2. First Aid

QUESTION **How can we save people who get involved in an accident?**

Activity **What if you are there?**

What to Do: Let's .

1 make a table like the one shown below

Accident	What would you do?
drowned in water	
bitten by a snake	
burned with fire	
an electric shock	

2 make a list of what you would do if you saw the accident in the table.

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Summary

If our friends get injured by accidents, we will help them until others get there. **First aid** is emergency care or treatment given to an ill or injured person before medical services arrive. First aid is important because it can sometimes save a person's life There are some rules of first aid How to provide first aid in different accidents are as follows

keep a person calm!

1. **Calling for help**

   First of all, we should call adults or emergency service for help.

2. **Keeping ourselves safe**

   Before we do anything to help an injured person, we make sure to keep ourselves safe otherwise we may also get involved in an accident.

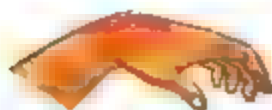
3. **Do not move injured person**

   Do not move an injured person unless it is necessary.

4. **Keep the person calm**

   Calm the person down by saying something encouraging like "You're going to be okay"; " Everything will be alright."

(1) Burns

- Use cold running water to cool the burn for at least 10 minutes.
- Do not apply ice to cool the burn
- Do not break blisters.
- Apply Bamaul or water mixed with coconut oil on slightly burned place.
- See a doctor as soon as possible if necessary.

burn

cool the burn with cold running water

2025

(2) Drowning

When we find a drowning person

- Call adults for help, and send someone to call emergency service.

How to Rescue

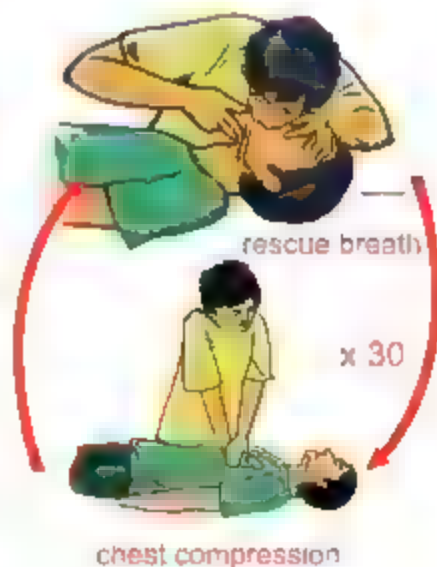
- If it is safe and possible, take the person out of the water by using a long pole or rope to try to reach the person, or flotation devices like a banana tree or a wooden plate so that he/she can catch them and come to the shore
- Do not attempt a swimming rescue yourself, or we may also get drowned

rescue of a drowning person

open airway by lifting the chin

When not breathing

- Open their airway by gently tilting back the head and lifting the chin like the picture shown right
- Pinch the nose and place your mouth over their mouth and blow until their chest rises. But the patient should be allowed time to breath out.
- Watch for the chest to rise as you give these breaths. If the chest does not rise, reposition the head and try again
- Place your hand over the center of the chest and lean over like the picture shown right. Give 30 chest compressions by pressing down about a third of the depth of the chest.
- Continue rescue breaths and chest compressions until they are breathing or doctor arranval

chest compression

(3) Electric Shock

What is Electric Shock?

Electricity can pass through the human body. An electric shock occurs when a person contacts with the source of electricity. If any part of the body receives an electric shock, it causes injury such as burns and damage to the heart that could cause the heart to stop. Such kind of accident is called electric shock.

Rescue and Treatment

1. Separate the person from the source of electricity as quickly as possible.
   - Turn off the power by unplugging the cord, by turning the main switch off, or by turning off the breakers.
   - If it is impossible to turn off the power, use a board, dry wooden stick, or rope to get the person away from the source of electricity. If possible, stand on a rubber mat, gunny bags or folded newspapers.
   - Do not touch the person who are receiving the electric shock, or you will suffer one too.

turn off the main switch

rescue a person with a dry wooden stick

2. Call emergency services for help as soon as possible.
3. Give first aid for electric shock if necessary.
   - Check for the person's consciousness, breathing, pulse, and injury.
   - If the person has a burn, give first aid for burns.
   - If the person is not breathing, give first aid for rescue breaths and chest compressions.

checking breathing and pulse

(4) Snake bites

What we should do

- Avoid such a place where snakes may live in
- Try to remember the color and shape of the snake
- Call emergency services for help as soon as possible.

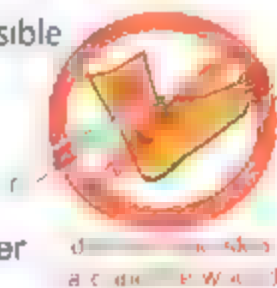
What to do if a snake bites

- Keep the patient as steady as possible.
- The snake bitten part of the body should be kept below the chest position.
- A rope or cloth should be tied a little above the cut area in such a way that the affected person does not feel discomfort or pain

first aid for snake bite

- Take the patient to the nearest hospital as soon as possible

What we should NOT do

- Don't try to suck the venom out.
- Don't cut the skin around the wound
- Don't apply ice
- Don't move the person unless in immediate danger
- Don't try to catch the snake
- Never go to snake charmers for treatment

Try It !

◆ **What should we do?**

1. With the help of the teacher, let's practice with our classmates how to rescue and give first aid to a friend who has been injured in various accidents.

- A friend injured in road accidents.
- A friend injured in fire.
- A drowning friend.
- A friend who has been electrocuted
- A friend who has been bitten by a snake.

EXERCISES

1. Fill in the blanks.

1) _____ is anything that happens by chance and causes damage or injury
2) Snakes live not only in bushes and forests but also around our

3) We can prevent drowning by learning how to ______ .
4) An electric shock occurs when a person contacts with the source of ______

2. Put a tick mark (✔) on the correct answer.

1) What is the good way to prevent fire accidents?
   a. keep clothes or paper away from heat   b. play with fire.
   c. Use full sleeve cloths while cooking   d. keep away from fire

2) What should we do for a burnt person?
   a. cool the burn with cold running water
   b. use ice to cool the burn.
   c. apply lotions or butter.
   d. break blisters as soon as possible

3) What should we do for a person bitten by snake?
   a. keep the person as still as possible.   b. try to suck the venom out
   c. cut the skin around the wound   d. try to catch the snake.

3. Short Questions:

1) What types of accidents are there at home?
2) How should we separate the person from the source of electricity?
3) How do we give fast aid to a burned person?

4. Descriptive Questions:

1) What are the general rules of first aid?
2) Explain how to rescue a drowning person
3) How can we prevent snakebite?
4) When a person is not breathing, what should we do?

2025

Chapter 12

Information in Our Life

Information is very important for our life. By using information, we bring change of our life style. Information helps us to decide what to do.

The technological tool used to create, collect, analyse and exchange information is called Information and Communication Technology. It is called ICT in short.

ICT makes our life easy and is used in many ways in the fields of business, education, medical and agricultural services. There are various types of information and communication technologies such as Computer, the Internet, Mobile phone, TV, Radio, and Camera, are examples of ICT.

The picture below shows many things in a room. Let's find out the Information and Communication Technologies at home.

ICT in a room

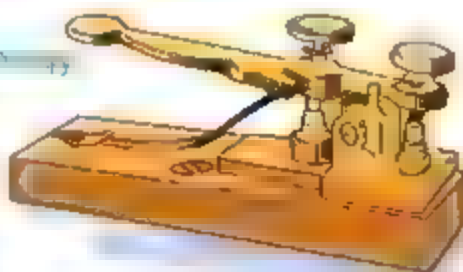
1. Improvement of ICT

QUESTION : How has ICT improved?

Summary

People have invented and developed various types of technologies in order to pass on information to others. Information and communication technologies (ICT) can be largely classified into two groups Technology for communication with people (Communication Technology) and Technology for recording information (Recording Technology).

Development of Communication Technology

The history of communication technology began thousands of years ago with the use of smoke signals and drums In next stage of information technology, people exchange information through sending letter, introducing newspapers book journals etc In the modern age, the telegraph was invented by Baron Schilling in 1832 A scientist named Samuel Morse succeeded to send information through wire using telegraph in 1837. In 1876, Alexander Graham Bell invented the telephone to talk directly with other people across large distances After that, a radio followed by a television was invented Now a days, we use ICT such as a computer, mobile phone, and the internet for communication

telegraph

Alexander Graham Bell speaking with a telephone

Development of Recording Technology

In ancient time, people drew pictures on the cave wall or used lithograph to record information After the invention of writing, people used paper to write down the message After the invention of printing press people have kept a record of a lot of information on books. Now a days people use a camera, a tape recorder, a video recorder, pen drive, CD, DVD and memory card to store the information.

technology for recording information

2. Use of Information

We get a lot of information every day. The amount of information is increasing at a rapid pace. Therefore, we need to make a good use of information in our life. The use of information includes the activities like collecting, storing, and sharing information. The following steps show a wise use of information.

Step 1: Deciding what types of information you need

We may need different types of information at one time or another. News, weather, events, ideas, or people's experiences are examples of information.

Step 2: Finding the ways and sources for collecting information

You must find the ways and sources that are best suited to the information you need. You may get the information by observing and asking people. There are different source of information such as people, newspaper, books, the internet, TV, and radio.

Step 3: Collecting the information

Necessary information should be collected with the best ways and from reliable sources. During collecting the information, we should keep a record. We can store the information by taking a note on a notebook or paper, or using a recording technology such as camera, CD and DVD.

Step 4: Sharing the information

Before sharing information, organize the information on the exercise book or papers based on your recording. When sharing the information with someone, we should pay attention to what we want to say and how we can give clear explanations to our friends.

QUESTION Can I collect, store and share information?

Activity Collecting, Storing, and Sharing Information

What to Do: Let's . . .

1. make a copy of "Information Collection Sheet" like the one shown below in your exercise book

Information Collection Sheet

a. Types of information you will collect

e.g. weather report, your body temperature, cricket news, etc

b. How to collect information (Ways)

c. Where to collect information (Sources)

d. Information you collected

2. seeing the step a to c in the previous page, fill in "a. Types of Information", "b. How to collect information" and "c. Where to collect information" in the sheet
3. collect information you need and keep a record of the information you collected in the sheet
4. organize the information in your exercise book based on your information collection sheet.
5. prepare the presentation, and share the information with your classmates.

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EXERCISES

1. Fill in the blanks.

1) Information and _____ Technology makes our lives easier
2) People used to draw picture on cave wall or used ________ to store information.
3) The use of information includes the activities like collecting, storing, and ______ information.

2. Put a tick mark (✔) on the correct answer.

1) Which one is a modern technology for communication?
   a. smoke signals b. the internet
   c. career pigeon d. drums

2) Which one is the best way to collect the information on your friend's experiences?
   a listening to the radio b watching a TV
   c reading a book d asking your friend

3. Short Questions.

1) Give four types of fields in which ICT is used
2) When you share the information with someone, what points should you pay attention to?
3) Give four examples of sources of information

4. Descriptive Questions.

1) Explain four steps for a wise use of information.
2) Explain how we can store information

5. Match the words on the left with the words on the right.

communication technology	television
recording technology	observing
source of information	camera
a way of collecting information	telephone

Chapter 13

Population and Natural Environment

Nature and people have close relation between them. People need natural resources to live. Population of the world is increasing continuously. However, the resource of world is limited. If this situation continues, what will happen to natural resources?

1. Relationship among Population, Shelter and Food

QUESTION **What is the relationship between a growing population, and needs of food and shelter?**

Activity **Relation between Population, food and shelter**

What to Do: Let's . . .

1. make a table like the one shown below.

	(1) how much rice do we need?	(2) how much space do we need?
number of people		
1	120 Kg	10 m^2
10		
100		
1000		
10000		

2. a person eats rice about 120 Kg a year. If the number of people increases like 10, 100, 1000, and 10000, how much rice do we need? Calculate and complete the blanks in the column of (1).
3. if a person needs 10m^2 of space, how much space do we need when the number of people increases like 10, 100, 1000, and 10000? Calculate and complete the blanks in the column of (2).
4. share the ideas with classmates

Results

number of people	(1) how much rice do we need?	(2) how much space do we need?
1	120 Kg	10 m^2
10	1200 Kg	100 m^2
100	12000 Kg	1000 m^2
1000	120000 Kg	10000 m^2
10000	1200000 Kg	100000 m^2

From the table, we can find the relationship that we need more rice and space when the number of people increases

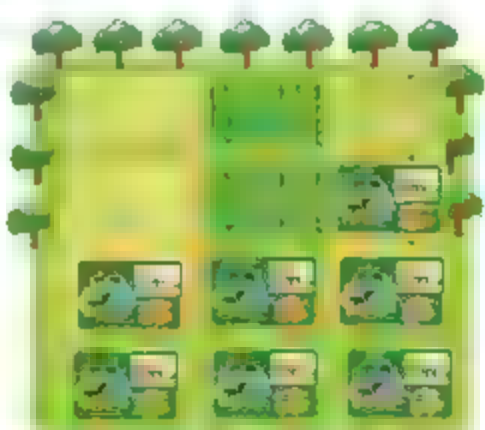
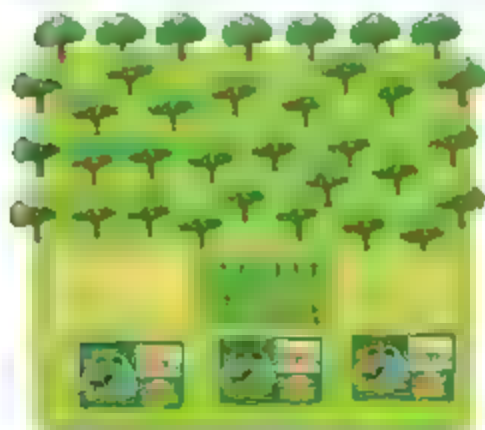
Discussion

◆ **Think about the following points.**

1. What is the relationship between growing population, and needs of food and space?
2. Share your idea with your classmate

What happens to the food and space in the table when population grows?

Summary

People need food and shelter to live The more population grows, the more food is necessary A growing human population will take up more space to build a shelter If the human population continues to grow, not enough food and space will be available

Large population needs more food to eat and space to build shelter

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2. Impact of Population Growth on Natural Resources

QUESTION What is the impact of population growth on natural resources?

Activity **Population Growth and Natural Resources**

What to Do : Let's . . .

1. make a table like the one shown below.

(1) what we make or need	(2) natural resources we use
e.g. making houses	e.g. soil, wood, rocks

2. what will we make or need if the population increases? Make a list in the column of (1) in the table
3. when we make or need something, what natural resources will we use? Make a list in the column of (2) in the table.
4. share the ideas with classmates

Discussion

◆ **What are the harms increased population caused?**

1. See the picture below.
2. Share with your classmate about how people causing harm to the environment.

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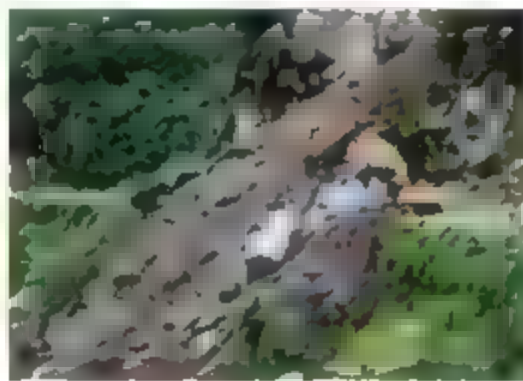
Summary

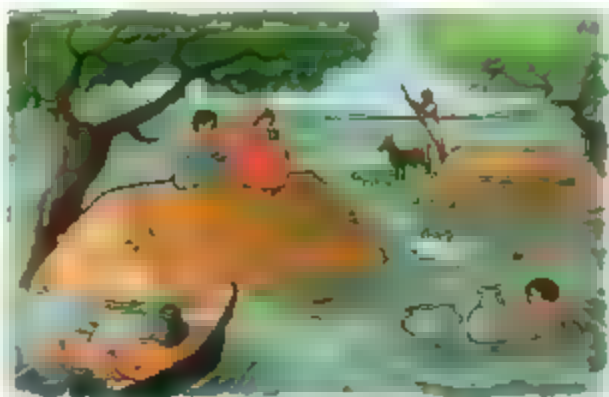
Human population has been growing. One of the reasons is there are great advances in science and technology. Advances in science and technology has made it possible for people to produce enough food. Advanced medical technology help people survive diseases and accidents. Now people can live longer.

Impact of Population Growth on Natural Resources

The growth in human population needs more food, shelter, land, energy, and other resources. However, the natural resources are limited

soil erosion

landslide

To get more natural resources, people have destroyed and changed the natural environment. For example, people have cleared forests for land to cultivate crops or livestock for food, and to build shelters and roads.

The loss of forests causes the destruction of the habitats of plants and animals and cause their extinction. It also can cause soil erosion and landslides. The environmental change can affect the changes in rainfall and temperature, and cause different types of natural disasters such as flood, drought, and storm.

flood

EXERCISES

1. Fill in the blanks.

1) People need more ______ and space if population continues growing.
2) Human population has been growing because of great advances in science and ______.
3) To get more natural resources, people have destroyed and changed the natural ______.

2. Put a tick mark (✔) on the correct answer

1) What is the relation between population growth, place and food?
   a. Increase of food production will increase place and population
   b. Population growth increase the demand of place and food
   c. Population growth decrease the demand of place and food
   d. Population increase does not affect the demand of place and food

3. Short Questions:

1) What will happen due to loss of forests?
2) How could people are destroying forests?

4. Descriptive Questions:

1) Explain the relationship between a growing population, and needs of food and shelter
2) What are the impact of the advancement of science and technology on population ?
3) What are the impacts of growing population on natural resources?

5. Match the words on the left with the words on the right.

destroying habitat	drought
using natural resource	extinction of living things
natural disaster	people getting long lives
development of medical technology	environmental changes

Glossary

Terms	Meaning of Terms	Page No.
accident	Anything that happens by chance and causes damage or injury	79
bacteria	A tiny, simple creature can not be seen with naked eyes that get nutrients from their environments in order to live. Some types of bacteria can make us sick	37
balanced diet	A diet that contains adequate amounts of all the necessary nutrients required for growth and activity.	31
burn	Injury to the body caused by heat. When we touch flames or hot objects such as stove, fireplace, or cloth iron, we get burned.	81
calcium	A mineral vital for building strong bones and teeth.	32
climate	Usual weather pattern of a long period of time	76
cloud	Water vapour condenses on a tiny dust particle and form a small water droplets that float in the sky	73
communication technology	The technology to communicate with people	90
compost	A mixture that consists of organic matter and is used for fertilizing and conditioning land.	24
conservation of natural resources	The preserving and wise use of natural resources	53
constellation	A pattern of stars with shapes like an animal, person or object	60
crop rotation	The practice of growing different types of crops in the same area in sequential seasons	24
(°C)degrees celcius	A unit of measuring temperature where water freezes at 0 degree and boils at 100 degree	76
desert	A place with very little water. a desert is mostly covered with rocks or sand	17
digestion	The process by which food converts into simple and absorbable from in animal body	9
drought	A dry weather condition due to low or no rainfall for a long period of time	

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energy	The ability to do things.	51
energy resource	Anything that can be used to produce energy by the people	52
equator	An imaginary line running around the widest part of the Earth, halfway between the North Pole and the South Pole	76
extinction	The dying out or termination of plants or animals	19
fertilizers	Elements that are most important in plant nutrients. It can help soil restore lost nutrients	24
first aid	Emergency care or treatment given to an ill or injured person before medical services arrive	83
flood	Overflowing river water on to the land during rainy season	74
fog	A kind of clouds that you can feel or touch at the ground.	73
fossil fuel	A fuel such as coal or oil that is formed in the earth from dead plants or animals	52
galaxy	A huge group of stars and systems	59,60
generator	A device that converts one form of energy into another form especially electric energy	52
habitat	The part of an environment where a plant or an animal lives.	3
healthy eating plate	A list of food conatins proper amount of carbohydrates, proteins, fats, minerals and vitamins for good health.	32
hemisphere	A half of the Earth	77
humidity	A measure of how much moisture is in the air	69
hygiene	Keeping ourselves and our surroundings clean in order to maintain good health	35
Information and Communication Technology (ICT)	The technological tool used to communicate, and to create, provide, and store information	88
landfills	Areas where garbage is placed in the land	22
lithograph	A printing on a stone or a metal plate.	90

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latitude	The distance from the equator.	76
matter	Anything that has mass and takes up space.	40,43
mineral	A solid material that is found in nature.	49
natural resource	A material found on the Earth that can be used by people.	9, 48
non-renewable resource	A natural resource that can not be replaced for millions of years once it has been used up.	50
nutrition	A substance that living things need in order to survive and grow. There are five nutrients; carbohydrates, proteins, fats, vitamins and minerals.	27
ocean	A large reserviour of salty water.	18
Predator	An organism preying on others.	3
pneumatophore	A specialized root that grows upwards out of the water or mud to exchange gases in a saline environment.	14
phases of the Moon	The changing shapes of the bright part of the Moon that we see.	57
planet	A large object in space that moves around the Sun.	58
plant breeding	The scientific improvement of plants to change the traits of plants in order to produce desired characteristics.	66
population	The number of people who live in the same area.	94
protein	A nutrient that is used to replace, repair and grow our bodies.	30
programme	Logical arrangement of codes for problem solving	94
programming	The process of logical arrangement for problem solving	94
recording technology	The technology to make a record of information.	91
recycling	Remaking things into either the same kind of thing or new products.	26
reducing	Making something smaller, useing less, or resulting in a smaller amount of waste.	26
renewable resource	A natural resource that can be replaced by nature	50

reusing	Using materials again in their original form instead of throwing them away.	26
rock	A solid material made of one or more minerals.	49
oral saline	A liquid mixture of salt, sugar or molasses and safe water that can be used to replace liquid lost from the body.	38
satellite	An object that revolves around a planet.	58
shelter	A place where animals can be safe. It provides animals with protection from enemies or weather conditions.	3
soil conservation	A protection of soil from erosion, or the maintenance of soil fertility.	26
soil erosion	The washing or blowing away by wind or water of the top layer of soil.	26
soil pollution	The contamination of soil with harmful substances.	25
solar panel	A device that change sunlight into electricity.	52
solar system	A system that is made up of the Sun, all the planets that move around the Sun, and other objects such as asteroids, comets, dusts, and gas	58
star	A huge ball of burning gases that gives off light, heat, and other energy.	60
Scratch	A Popular programme.	94
Sprite	Cartoon character of serach.	94
technology	A tool or process that makes our life better, easier and very comfortable.	62
telegraph	A machine that is used for transmitting messages in the form of electrical signals.	90
temperature	A measured of how warm or cold the air is.	69
the Moon	A space object that move around the Earth.	57
universe	Everything that exists, including galaxies, stars, planets, space, all matter, and energy.	60
vitamin	A nutrinet that helps make our body work properly, strengthen the immune system, support growth, and help our body parts do their jobs.	29
volume	An amount of space that matter takes up.	41

waterborne disease	A disease caused by taking water contaminated with germs.	36
weather	The condition of what the sky and air like each day.	68
weight	A measure of how strongly the Earth pulls a matter to the centre of the Earth.	43
wind	Moving air.	69
woodland	A place with many trees and bushes growing naturally.	17

End

Academic Year 2025, Class Four–Science

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